Chapter 19
Transportation

[*Note to reviewers: the data and figures presented in this chapter are currently under revision based on updated project alternatives information and GIS data. Please review this chapter with a focus on the format, structure, and impact conclusions at this time. Subsequent versions of this chapter will provide the updated data and figures.*]

19.1 Environmental Setting/Affected Environment

19.1.1 Potential Environmental Effects Area

The study area for transportation is shown in Figure 19-1 and consists of the Delta Region, as discussed in Chapter 4, *Approach to the Environmental Analysis*. Roadway, marine, rail, air, and transit transportation facilities serve the Delta. The potential effects of Conservation Measure 1 (CM1) on these facilities are evaluated at the project level, and the effects of CM2–CM24 are evaluated at the program level, consistent with the approach described in Chapter 4.

Transportation systems in the other geographic regions of the project area—upstream of the Delta and the CVP and SWP export service areas—would not be affected by the proposed water conveyance system or conservation components.

19.1.2 Roadway Facilities

19.1.2.1 State Highways

State highways are roadways that are numbered and/or maintained by the state. A number of designated state highways with multiple classifications pass through the Delta Region. Generally, state highways are categorized using the federal classification system. The categories are listed below, from the most important type of facility (with regard to traffic carrying capacity) to the least important.

- Interstate highways.
- Other freeways and expressways (major urban roadways that have limited access but are not part of the interstate highway system).
- Principal arterial roads (major urban roadways, typically having more than one lane in each direction, that provide for the larger traffic flows between areas within the roadway system).
- Major collector roads (major urban or rural roadways that connect minor collector roads and local streets).
- Minor collector roads (minor urban or rural roadways that connect local streets to the balance of the roadway system).
- Local streets and/or roads (urban or rural public roadways that are not formally classified in the roadway system plan). (Surface Transportation Policy Project 2009)

State highways in the Delta are also shown in Figure 19-1. They are described from the highest (most important) to the lowest (least important) classification in the following subsections.

Interstate 5

Interstate (I-) 5 is a north–south interstate highway that traverses the Delta for most of its extent. At the southern boundary of the Delta, I-5 is a divided highway with two lanes in each direction and grade-separated traffic interchanges with other major transportation facilities. There are additional lanes in certain sections that have substantially higher traffic volumes. The California Department of Transportation (Caltrans) publishes existing I-5 traffic volumes from 2006 on its website (Caltrans 2011), and they vary within the section of I-5 that passes through the Delta. At the southern end, traffic volumes are consistent with intercity rural interstates, with average annual daily traffic (AADT) between 20,000 and 25,000 vehicles per day (vpd). AADT is the total number of vehicles that pass a particular location on a roadway for an entire year divided by the number of days in a year (i.e., 365), which determines the average number of vehicles per day.

Volumes are substantially higher between the I-205 and SR 120 junctions; the published volume from 2010 is 152,000 AADT. Volumes drop to the north of SR 120 but not as low as in the area to the south of Tracy (Route 26). Adjacent to Stockton at the interchange with SR 4, volumes range between 131,000 and 140,000 AADT. North of Stockton, volumes again drop until the Laguna Boulevard interchange; AADT to the south of that interchange is 69,000 vpd, while AADT to the north is 92,000 vpd. Traffic volumes increase to the north—influenced by residents of the Sacramento area who commute on I-5—from 101,000 vpd south of Florin Road to 116,000 vpd north of that interchange. At the northern end of the Delta, I-5 carries 143,000 vpd south of the Capital City Freeway and 178,000 vpd north of that freeway.

State Route 4

SR 4 is an east–west state highway that traverses the Delta from approximately the community of West Pittsburg/Bay Point on the west to the western side of Stockton on the east. At its western end, SR 4 is an urban expressway with five travel lanes in each direction. SR 4 eventually narrows to a limited-access expressway with two lanes in each direction until its junction with the start of SR 160. SR 4 then exits onto Main Street in Antioch leading to Oakley as a divided urban arterial road. Immediately to the east of the signalized intersection of SR 4 and Bridgehead/Neroly Road, SR 4 becomes a five-lane urban arterial road with a continuous center two-way left-turn lane. At Big Break Road in Oakley, SR 4 resumes as a four-lane urban arterial configuration divided by a landscaped median. As SR 4 leaves the urban area, it eventually narrows to a rural, two-lane cross section.

To the east of Discovery Bay, SR 4 crosses Old River on a through-truss swing bridge near Twenty-one Mile Cut. SR 4 continues as a two-lane rural highway and crosses the Middle River on a combination bridge (through- and partial-truss sections). SR 4 crosses the San Joaquin River on a two-lane, through-truss bridge. SR 4 widens to a three-lane cross section to the east of its intersection with Army Court in Stockton. Traffic volumes on SR 4 vary from 128,000 vpd (Caltrans Website 2011) at the western portion of the Delta to much lower volumes in the rural area between Discovery Bay and Stockton. In Oakley, volumes on SR4 range between 14,700 vpd east of Cypress Road and 20,600 vpd to the west of the O Hara Avenue intersection. The most notable change in AADT volumes occurs on SR 4 at the Discovery Bay Boulevard intersection—traffic volume to the west of this intersection is 18,700 vpd, while east of the intersection traffic volumes fall to

8,100 vpd. Traffic volumes increase when SR 4 approaches Stockton. To the west of the SR 4/Fresno Avenue intersection, the AADT on SR 4 is 13,000 vpd.

State Route 12

SR 12 is generally an east–west state highway that connects Suisun City with I-5 near Lodi. For the majority of its length in the Delta, SR 12 is two lanes. Traffic volumes published by Caltrans on its website (2011) indicate that AADT on SR 12 is highest in Suisun City, ranging between 35,000 vpd and 43,000 vpd. In the rural area to the east between Suisun City and Rio Vista, the AADT varies between 11,500 vpd east of the SR 12/Scalley Road intersection to 14,100 vpd east of the SR 12/SR 113 junction. In Rio Vista, AADT increases to 19,400 vpd east of Drouin Drive and varies between 17,400 vpd west of Drouin Drive and 19,800 vpd east of SR 84 North.

After crossing the Sacramento River, the AADT drops to 17,100 vpd east of the SR 12/SR 160 intersection. East of the Terminous Road intersection, the AADT is 17,500 vpd. At the SR 12 intersection with Glasscock Road, the AADT is 15,200 vpd to the west, increasing to 16,000 vpd to the east. That same AADT is reported west of Guard Road, but it then decreases to 16,400 vpd east of Guard Road. The same AADT is reported to the west to SR 12's interchange with I-5. An AADT of 15,000 vpd is reported to the east of that interchange.

State Route 84

SR 84 is a north–south state highway that connects Rio Vista to West Sacramento. The federal classification of SR 84 varies from rural major collector road tourban minor arterial road to urban principal arterial road (in West Sacramento).

The southern end of SR 84 begins at its interchange with SR 12 in Rio Vista. At that end, SR 84 is a two-lane road. It follows the western bank of the Sacramento River until crossing the Cache Slough on a ferry. This eight-car ferry operates 24 hours a day, with the exception of lunch and dinner breaks, at no charge to the traveler (Caltrans 2009d). The southbound approach to the ferry includes a single lane for queuing. After the ferry, SR 84 remains a two-lane road on the eastern bank of the slough.

SR 84 follows the Sacramento River Deep Water Ship Channel until Miner Slough, where it follows the slough to the north. SR 84 crosses Miner Slough at River Road on a through-truss swing bridge (Caltrans 2009c). Near Harmon Avenue in West Sacramento, SR 84 widens to five lanes with a raised median in some locations to protect left-turn storage lanes and a center turn lane elsewhere.

According to published traffic data from the Caltrans website (2011), SR 84 carries 3,200 vpd north of its junction with SR 12. This volume drops north of Airport Road to an AADT of 1,300 vpd and continues to decline to 240 vpd north of the Cache Slough ferry. North of the Miner Slough Bridge, the AADT increases to 225 vpd and continues increasing toward West Sacramento. North of Babel Slough Road, the AADT is 1,600 vpd. Caltrans does not have published volumes north of that location.

State Route 160

SR 160 connects Antioch with Sacramento, crossing the Delta in a north–south direction, generally following the Sacramento River. The section of SR 160 south of SR 12 is designated as part of the California Freeway and Expressway system. SR160 starts at its junction with SR 4 in Antioch as a

four-lane divided highway that has grade-separated interchanges with cross streets. This section is built to freeway standards.

North of Wilbur Avenue, SR 160 crosses the San Joaquin River on the John A. Nejedly Bridge (Bay Area Toll Authority 2009). This arch bridge carries a single lane in each direction with a jersey-barrier divider between the lanes. At this location, SR 160 is classified as a rural principal arterial road.

North of the San Joaquin River, SR 160 continues as a two-lane road (one lane in each direction) with a rural cross section. SR 160 leaves Sherman Island by crossing the waterway separating Sherman Island from Brannan Island on a two-lane through-truss lift span bridge. SR 160 widens at the intersection with SR 12 (southeast of Rio Vista) to provide for turn lanes at the intersection. SR 160 is classified as a rural major collector road north of SR 12. There is a similar intersection widening at Circle Drive that provides access to Ida Island, a small rural residential community by the Sacramento River.

In the downtown area of Isleton (starting at A Street), the pavement for SR 160 is wide enough to include striping to provide parking and an access road adjacent to commercial buildings on the south side of SR 160. It returns to a two-lane pavement width east of C Street. Northeast of Isleton, SR 160 crosses the Sacramento River on a two-lane dual-leaf bascule lift bridge. The deck of this bridge appears to be narrow, with no apparent accommodations specifically for pedestrians or bicycles.

SR 160 intersects SR 220 in the unincorporated community of Ryde. There are no intersection-specific widenings at this location; both roads remain two lanes wide (one lane in each direction) with rural cross sections. SR 160 remains a two-lane facility as it passes through the community of Walnut Grove and as it crosses Steamboat Slough on a double-leaf bascule lift bridge (Caltrans 2009c). The pavement for SR 160 widens in the community of Courtland where the extra width provides continuous access to businesses with perpendicular parking. SR 160 continues as two-lane roadway as it again crosses the Sacramento River on a double-leaf bascule lift bridge at Paintersville and travels through the community of Hood. Similar to Courtland, there are locations in Hood where a widened pavement for SR 160 provides continuous access and perpendicular parking for commercial areas.

Volumes on SR 160 tend to be higher between Antioch and Rio Vista than in the more rural areas. North of SR 4, the reported AADT (Caltrans 2011) is 10,100 vpd, increasing to 12,300 vpd as SR 160 approaches the John A. Nejedly Bridge. The AADT remains high as SR 160 approaches SR 12, but drops to 2,200 vpd in Isleton. Volumes on SR 160 from that point north vary between nearly 3,100 vpd (south of the Walnut Grove bridge) to as low as 1,350 vpd (north of the Hood-Franklin Road in Hood). At the Freeport bridge, the reported AADT is 1,900 vpd south of the bridge and 6,400 vpd north of the bridge.

State Route 220

SR 220 connects SR 84 to SR 160 in an east–west direction. It is classified as a rural major collector road. Immediately east of SR 84, SR 220 is a two-lane road with minimal shoulders or ditch drainage. Traffic on SR 220 crosses Steamboat Slough on a ferry known as the "J Mack" or "Steamboat Slough" ferry. There is no charge for the ferry. It operates 24hours a day, 7 days a week, with the exception of meal breaks. On the eastern side of Steamboat Slough, SR 220 continues as a two-lane road with a rural cross section until it ends at the intersection with SR 160 in Ryde.

The AADT data published by Caltrans indicate that SR 220 is a low-volume rural highway. Immediately east of the intersection with SR 84, SR 220 has an AADT of 150 vpd. This volume increases slightly after the crossing of Steamboat Slough (AADT of 260 vpd). Higher volumes of 900 vpd are reported east of Grand Island Road, with a reduction in volume at the end of SR 220 in Ryde (780 vpd).

19.1.2.2 County Highways

County highways tend to be two-lane rural facilities outside of urban areas. Most roadways are paved with an all-weather surface such as asphalt, but some, as noted, are paved with a gravel surface. Within the Delta, a large number of roadways are under the jurisdiction of six counties (Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo). County roads within the affected environment that are classified as principal arterial roads are depicted in Figure 19-1).

Alameda County Roads

Table 19-1 describes the county roads in the portion of the transportation study area in Alameda County and provides classification and traffic volumes (when available).

Table 19-1. Alameda County Roads in the Transportation Study Area

	Extents			Traffic Volume		
Roadway	From	To	Classification	Daily	PM Peak (Direction)	Notes
Byron-Bethany Road	Contra Costa county line	San Joaquin county line	Not classified	10,300	475 (WB)	Traffic data are from May 2010

Sources: Bello pers. comm. 2010, Alameda County 2002

Notes:

Daily volumes are in both directions and rounded to nearest 100 trips. PM peak volumes are rounded to nearest 5 trips and are provided for the peak direction only.

PM = afternoon, WB = westbound

Contra Costa County Roads

Table 19-2 describes the county roads in the portion of the transportation study area in Contra Costa County and provides classification and traffic volumes (when available).

Table 19-2. Contra Costa County Roads in the Transportation Study Area

Roadway	Extents		Classification	Traffic Volume		Notes
	From	To		Daily	PM Peak (Direction)	
Balfour Road	West of Byron Highway	Byron Highway	Arterial	5,200	280 (EB)	Two-lane road. Slight offset of east leg of intersection with Byron Highway. Count data from 2006.
Bartels Drive	Knightsen Avenue	Delta Road	Not classified	NA	NA	Narrow two-lane road with no shoulders.
Bethel Island Road	Riverview Drive	E. Cypress Road	Arterial	5,800	290 (NB)	Two-lane road except at south end. From 1,000 feet north of Cypress Road, cross section is widened to two lanes in each direction with raised median. A new bridge was being constructed across Dutch Slough in 2010. Traffic data are from station south of bridge (2006).
Bixler Road (north portion)	Orwood Road	Point of Timber Road	Collector	6,600	335 (NB)	Two-lane road. Traffic data are from station north of Point of Timber Road (2007).
Bixler Road (south portion)	SR 4	Camino Diablo	Not classified	2,600	230 (NB)	Two-lane road. North leg of intersection is a five-lane cross section. Traffic data are from station south of SR 4 (2007).
Bruns Road	Byron Highway	Alameda county line	Not classified	NA	NA	Two-lane rural road with centerline and edge striping.
Byer Road	Byron Highway	Bixler Road	Not classified	2,600	225 (EB)	Two-lane road with centerline and edge striping. Signed for slow-moving agricultural vehicles. Count is east of Byron Highway (2007).

Roadway	Extents From	Extents To	Classification	Traffic Volume Daily	Traffic Volume PM Peak (Direction)	Notes
Byron Highway (middle portion)	SR 4	Kellogg Creek Road	Arterial	12,200	695 (NB)	Two-lane road with intersection widening at north end intersection with SR 4. Count is south of SR 4 (2008).
Byron Highway (northern portion)	Delta Road	SR 4	Arterial	3,700	210 (SB)	Two-lane road with intersection widening where south end intersects with SR 4. Count is south of Balfour Road (2006).
Byron Highway (southern portion)	NW of Byron Hot Springs Road	Alameda county line	Arterial	8,400	425 (NB)	Two-lane road. Count is at California Aqueduct Bridge (2008).
Camino Diablo	Byron Highway	Bixler Road	Not classified	800	40 (EB)	Two-lane road. Intersection with Byron Highway is at an angle. Count is east of Byron Highway (2007.)
Canal Road	Taylor Road	Bethel Island Road	Not classified	NA	NA	Gated at Bethel Island Road (may be private).
Clifton Court Road	Byron Highway	End (Approximately 5,000 feet east of Byron Highway)	Not classified	NA	NA	Two-lane roadway with some short sections of 1.5 lane width.
Delta Road	Knightsen Avenue	East of Byron Highway	Arterial (to Byron Highway) / Not classified east of Byron Highway	2,800	180 (WB)	Two-lane roadway. Gate and light-protected rail crossing between Knightson and Byron Highway. Count is east of Knightson (2006).
Dutch Slough Road	Jersey Island Road	E. Cypress Road	Not classified	400	40 (both directions)	Narrow single roadway on top of levee. Speed bumps installed in residential section. Count was taken on a Friday north of Jersey Island Road (1994) and was not directional.

Roadway	Extents		Classification	Traffic Volume		Notes
	From	To		Daily	PM Peak (Direction)	
E. Cypress Road	West of Jersey Island Road	East of Bethel Island Road	Arterial	7,700	345 (EB)	Two-lane roadway except for 1,200–800 feet east and west of Bethel Island Road Intersection. In that section, roadway is widened to four travel lanes with raised median. Count is east of Jersey Island Road (2003).
Eagle Lane	Byron Highway	East of Byron Highway	Not classified	NA	NA	Narrow roadway (may be private).
Eden Plains Road	Knightsen Avenue	Sunset Road	Arterial	2,600	155 (SB)	Two-lane road with centerline and edge striping. Count is north of Sunset Road (2006).
Fisher Avenue	Eden Plains Road	Byron Highway	Not classified	NA	NA	Two-lane road that narrows to the east of Eden Plains Road. It is not continuous as a public road between Eden Plains Road and Byron Highway; there is a gate approximately 2,100 feet east of Eden Plains Road.
Herdlyn Road	Byron Highway	End	Not classified	NA	NA	Varies in width between a single lane and 1.5 lanes wide. There is an at-grade crossing immediately to the east of the intersection with Byron Highway.
Holey Road	West of Byron Highway	Byron Highway	Collector	200	20 (EB)	Two-lane road with centerline striping only and little or no shoulders. Count is west of Byron Highway (1995).
Jersey Island Road	Dutch Slough Road	E. Cypress Road	Collector	500	30 (SB)	Two-lane roadway. Count is north of Cypress Road (2002).

Roadway	Extents		Classification	Traffic Volume		Notes
	From	To		Daily	PM Peak (Direction)	
Kellogg Creek Road	Byron Highway	East of Bixler Road	Not classified	NA	NA	Road is gravel and single lane at Byron Highway and signed with "Not a through street." The public paved roadway extends approximately 2,100 feet to the west of Bixler Road. The paved portion is between one and 1.5 lanes wide.
Marsh Creek Road	Byron Highway	Bixler Road	Collector	1,400	85 (EB)	Two-lane road. Serves as SR 4 Bypass to the west of Byron Highway. Count is east of Byron Highway (2009).
N. Bruns Way	Byron Highway	End (Approximately 3,500 feet south of Byron Highway)	Not classified	NA	NA	Two-lane road. No striping.
Orwood Road	Byron Highway	East of Fallman Road	Not classified	2,600	130 (WB)	Two-lane road. Provides access to land area north of Discovery Bay. Count is east of Byron Hwy (2008).
Point of Timber Road	Byron Highway	East of Bixler Road	Collector (Byron Highway to Bixler) / Not classified (east of Bixler Road)	3,300	182 (EB)	Two-lane road. Count is east of Byron Highway (2005).
Sunset Road	Eden Plains Road	Byron Highway	Arterial	3,700	240 (EB)	Two-lane paved road with centerline striping and gravel shoulders. Count is east of Eden Plains Road (2006).

Roadway	Extents From	Extents To	Classification	Traffic Volume Daily	Traffic Volume PM Peak (Direction)	Notes
Taylor Road	Canal Road	Bethel Island Road	Not classified	NA	NA	Two-lane paved road with centerline and edge striping. Signed as "End of County Maintenance" immediately south of intersection with Canal Road.
Tule Lane	Knightsen Road	East of Knightsen Road (Approximately 1 mile)	Not classified	NA	NA	Two-lane residential roadway. Dead end to the east of Knightsen Road.
Western Farms Ranch Road	End of road	Byron Highway	Not classified	NA	NA	Gravel two-lane roadway signed as "Private."

Sources: Contra Costa County 2004, Contra Costa County 2010

Notes:

Daily volumes are in both directions and rounded to nearest 100 trips. PM peak volumes are rounded to nearest 5 trips and are provided for the peak direction only.

EB = eastbound, NA = not available from published sources, NB = northbound, PM = afternoon, SB = southbound, SR = State Route, WB = westbound

Sacramento County Roads

Table 19-3 describes the county roads in the portion of the transportation study area in Sacramento County and provides traffic volumes (when available).

Table 19-3. Sacramento County Roads in the Transportation Study Area

Roadway	Extents From	Extents To	Traffic Volume Daily	Traffic Volume PM Peak (Direction)	Notes
Hood Franklin Road	SR 160	I-5	4,800	NA	Interchange with I-5. Count is east of I-5 (2009).
Lambert Road	SR 160	I-5	440	NA	Under crosses I-5 (no interchange). Count is east of SR 160 (2009).
Dierssen Road	End (1.5 miles west of I-5)	I-5	NA	NA	No interchange with I-5. Varies in width from 1 to 2 lanes. Much of road is gravel in marginal condition. Counts not available.
Twin Cities Road (County Road E13)	River Road	I-5 (Exit 498)	4,500	NA	Two lanes (one in each direction). Interchange with I-5 with minor widening for turn lanes. Count is east of River Road (2009).
Walnut Grove – Thornton Road (County Road J11)	River Road / Race Track Road	San Joaquin county line (Mokelumne River)	4,000	NA	Two lanes (one in each direction). Continues as Walnut Grove Road in San Joaquin County. Count is east of Race Track Road (2007).
Brannan Island Road	SR 12 (2.5 miles SW of Rio Vista)	End (near W. Brannan Island Road)	NA	NA	Gravel pavement. One lane width. Does not connect with W. Brannan Island Road.
Twitchell Island Ferry Road	W. Brannan Island Road	W. Brannan Island Road	NA	NA	Two lanes (one in each direction). Contained entirely on Twitchell Island. W. Brannan Island Road provides connection to SR 160.

Source: Sacramento County 2009

Notes:

Daily volumes are in both directions and rounded to nearest 100 trips. PM peak volumes are rounded to nearest 5 trips and are provided for the peak direction only.

I-5 = Interstate 5, NA = Not available from published sources, PM = afternoon, SR = State Route

San Joaquin County Roads

Table 19-4 describes the county roads in the portion of the transportation study area in San Joaquin County and provides traffic volumes (when available).

Table 19-4. San Joaquin County Roads in the Transportation Study Area

Roadway	Extents		Traffic Volume		Notes
	From	To	Daily	PM Peak (Direction)	
Bacon Island Road	W. Eight Mile Road	W. 8 Mile Road	NA	NA	
Barber Road	N. Vail Road	I-5	100		Two lanes (one in each direction). Crosses under I-5 (no interchange). Count is east of I-5 (1975).
Blossom Road	Barber Road	Hog Slough	200		Two lanes (one in each direction). Gated (private) south of Peltier Road. Crosses Walnut Grove Road at offset intersection (south leg offset to west of north leg). Count is north and south of Walnut Grove Road (1977).
Bonetti Road	End (2 miles north of Clifton Court Road)	Clifton Court Road	100		Two-lane roadway. Count is north of Clifton Court Road (1980).
Calpak Road	End (2.8 miles north of Clifton Court Road)	Clifton Court Road	400		Two-lane roadway. Count is north of Clifton Court Road (1973).
Clifton Court Road	End (4.5 miles west of S. Tracy Boulevard)	S. Tracy Boulevard	400		Two-lane roadway. Count is west of S. Tracy Boulevard (1980).
Guard Road	W. Cotta Road	End (White Slough)	100 (north) / 200 (south)		Two-lane paved road. Has connection to I-5 at Turner Road interchange (Exit 487) via W. Cotta Road. Public road ends at White Slough (gated maintenance road continues on top of levee). Count is SR 12 (1980).
N. Holt Road	Neugerbauer Road (Stockton Deep Water Ship Canal)	SR 4 (via W. Lane Road and S. Whiskey Slough Road)	500 (south)/ 400 (north)		Two-lane paved road. Toward the southern end at BNSF railroad, crosses under rail at a height-restricted, single-lane undercrossing (13 feet signed height and estimated 9 foot width), which, according to signed warnings, is prone to flooding. Count is McDonald Road (1995).

Roadway	Extents		Traffic Volume		Notes
	From	To	Daily	PM Peak (Direction)	
N. McDonald Road	Neugerbauer Road	Inland Drive	800		Narrow levee road, continuation of Neugerbauer, on levee adjacent to waterway that connects Stockton Deep Water Ship Channel to Empire Cut. Portion on levee has tight radii curves. Road on levee for approximately 1 mile. The lowland section is straight and capable of higher speeds. Count is at Holt Road (1995).
N. Vail Road	End (1,200 feet north of Barber Road)	Walnut Grove Road	200		Two lanes (one in each direction). Count is north of Walnut Grove Road (dated 1977).
Peltier Road	Blossom Road	I-5	1,700		Two lanes (one in each direction). Interchange with I-5 (Exit 490). Intersection with Blossom Road is curve (westbound to northbound and southbound to eastbound). Count is east of I-5 (1995).
S. Tracy Boulevard	SR 4	S. of Clifton Court Road	3,000		Two-lane roadway. Count is south of Howard Road (2009).
W. Cotta Road	N. Guard Road	I-5	100		Count is east of Guard Road (2009).
W. Eight Mile Road	Correia Road	I-5	3,000		Two lanes except between Trinity Parkway and I-5 (two through lanes in each direction and exclusive left and right turn lanes at intersections). West of Correia Road, W. Eight Mile Road continues as Empire Tract Road. Count is west of I-5 (1996).
W. Jacobs Road	Holt Road	Woodsbro Road	100		Holt Road intersection immediately north of BNSF undercrossing. Immediately to east of Hold Road, geometry of W. Jacobs Road exhibits tight curves signed at 25 mph. Count is west of Inland Road (1995).
W. Kingston School Road	SR 4	Inland Drive	NA	NA	Private road. Intersection with SR 4 opposite Bacon Island Road intersection.

Roadway	Extents From	Extents To	Traffic Volume Daily	Traffic Volume PM Peak (Direction)	Notes
W. Neugerbauer Road	N. Holt Road	W. McDonald Road	200		Count is west of N. Holt Road and (1984).
Walnut Grove Road	Sacramento county line (Mokelumne River)	I-5	(a) 3,000 (b) 2,500		Two lanes with minor widening at I-5 interchange (Exit 492). Continues as Walnut Grove-Thornton Road in Sacramento County. Count (a) is east of the Sacramento county line. Count (b) is east of Blossom Road. Both counts are dated 1995.
Woodbridge Road	End (5.6 miles west of I-5)	I-5	600		Two-lane paved road. Crosses under I-5 (no interchange). Long dead-end road providing access to land between Hog Slough to north and Sycamore Slough to south. Count is west of Thornton Road (adjacent to I-5) (1995).

Source: San Joaquin County 2010.

Notes:

Daily volumes are in both directions and rounded to nearest 100 trips. PM peak volumes are rounded to nearest 5 trips and are provided for the peak direction only.

BNSF = Burlington Northern Santa Fe Railway, I-5 = Interstate 5, NA = not available from published sources, PM = afternoon

Solano County Roads

Table 19-5 describes the county roads in the portion of the transportation study area in Solano County and provides classification and traffic volumes (when available).

Table 19-5. Solano County Roads in the Transportation Study Area

Roadway	Extent From	Extent To	Classification	Traffic Volume Daily	Traffic Volume PM Peak (Direction)	Notes
Oxford Road	SR 84 (west)	West of community of Oxford (approximately 4,000 feet east of SR 84)	Local	NA	NA	Two-lane road with centerline and edge striping.
Holland Road	End (Approximately 1.2 miles west of SR 84)	SR 84 (east)	Local	200	20 (NA)	Two lanes with centerline and edge striping. Count location is west of SR 84 (1994).

Roadway	Extent From	Extent To	Classification	Traffic Volume Daily	Traffic Volume PM Peak (Direction)	Notes
Ryer Road E.	SR 84 (west)	East of SR 84 (east)	Local	NA	NA	Two lanes with centerline and edge striping. Geometry is constrained by location on levee.
Elevator Road	SR 84 (west)	East of SR 84 (east)	Local	NA	NA	Adjacent elevator buildings combined with the grade change between SR 84 (located on the levee) and Elevator Road, which is located below the grade of the levee, have required a complex intersection which separates eastbound and westbound movements. Two-lane road.
Ryer Road E.	SR 84 (west)	East of SR 84 (east)	Local	400	35 (NA)	Two-lane road with centerline and edge striping.

Source: San Joaquin County 2010

Notes:

Daily volumes are in both directions and rounded to nearest 100 trips. PM peak volumes are rounded to nearest 5 trips and are provided for the peak direction only.

NA = not available from published sources, PM = afternoon, SR = State Route

Yolo County Roads

Table 19-6 describes the county roads in the portion of the transportation study area in Yolo County.

Table 19-6. Yolo County Roads in the Transportation Study Area

Roadway	Extent		Notes
	From	To	
County Road 141	County Road 144	Highway E9 (S. River Road)	Two-lane roadway.
County Road 144	End (Approximately 1 mile north of County Road 141)	End (Approximately 500 feet south of County Road 143)	Two-lane roadway on top of levee. Horizontal curves are constrained by location on levee.
County Highway E9 (S. River Road)	City of West Sacramento	Sacramento county line	Two-lane roadway running on levee with constrained horizontal geometry. Continues as Sutter Slough Bridge Road in Sacramento County.
County Road 142	County Road 144	County Highway E9	Two-lane roadway.
County Road 157 (N. Courtland Road)	County Road 150	Waukeena Road (County Road 145)	Narrow two-lane roadway.
County Road 158 (Courtland Road)	Z Line Road	County Highway E9 (S. River Road)	Two-lane roadway. Carries designation as SR 84 from Jefferson Boulevard to Ryer Avenue.
County Road 107	Courtland Road	County Road 161	Narrow gravel roadway on levee on east side of Sacramento Deep Water Ship Channel. Primary purpose appears to be levee maintenance.
County Road 161	County Road 107	SR 84	Narrow gravel roadway. Serves unincorporated community of Daisie. Approximately 3,700 feet west of SR 84.

Source: Yolo County 2009

Notes:

Daily volumes are in both directions and rounded to nearest 100 trips. PM peak volumes are rounded to nearest 5 trips and are provided for the peak direction only.

NA = Not available from published sources, PM = afternoon, SR = State Route

19.1.2.3 Freight Routes

The California Transportation Plan 2025 (CTP2025) recognizes the importance of goods movement to the California economy, noting that an estimated "45% of all U.S. continental, containerized cargo passes through California's ports." The Port of Oakland, located 60 miles west of Stockton, is one of the four largest container ports in North America, and much of the freight moving through the port travels via I-5. The importance of freight traffic is reflected in the policy regarding goods movement and the strategies to implement that policy contained within Goal 3 of CTP2025, *Support the Economy*. CTP2025 includes a policy to "enhance goods movement mobility, reliability, and system efficiency." Strategies that address that policy include, "Focus statewide system investments on

corridors and gateways that handle the highest volumes of freight traffic and/or have the most significant transportation problems" (Caltrans 2009e).

The investment focus strategy is reflected in an appendix to CTP2025 that discusses the "Global Gateways Program." The Delta project's entire proposed affected environment area for transportation is within a "major international trade region" as defined in the CTP2025. Most of the designated priority corridors for freight within the affected environment area for transportation are the interstate highways (I-5, I-80, I-205, and I-580) with the notable exceptions of SR 99 on the eastern edge of the area, the UPRR route along the I-80 corridor, and the BNSF line between Antioch and Stockton (Caltrans 2009e).

State Truck Routes

The Global Gateways Program's primary purpose is targeting state transportation investment to meet the CTP2025 Goal 3 of supporting the economy. The state also regulates the roadway system to provide for the safe and effective movement of trucks (Caltrans 2009f). These state regulations address the below issues.

- The ability of roadway geometrics to provide for safe passage of vehicles meeting either the "larger truck" definition of the 1982 Surface Transportation Assistance Act (STAA) or the "California Legal" truck definition of the 1983 Assembly Bill 866.
- The capacity of pavement or bridge structures to handle loads represented by freight vehicles.
- The safety of particular payloads carried by certain freight carriers (e.g., flammable materials may be restricted from tunnels lacking in fire suppression equipment).

Larger trucks are allowed by the STAA on all interstate highways and on the non-interstate federal-aid primary highway system. The trucks are defined below.

- Trucks with double trailers (28.5 feet long).
- Trucks with a single trailer (up to 48 feet long) but with unlimited distance between the attachment point ("king pin"), between the trailer and the tractor (cab), and the rear axle (referred to as KPRA).
- Trucks in combination of single and double trailers with no limitation on length.
- Trucks with widths up to 102 inches (8.5 feet).

The system of roadways that allow larger trucks (as defined by STAA) is called the "National Network" (NN) (Caltrans 2009f). Within the affected environment for transportation, such routes are I-5, I-80, I-205, I-580, and SR 99 (Caltrans 2009g).

California identifies and regulates truck movements by the designation of Terminal Access (TA), California Legal, and California Legal Advisory routes. The TA routes have been reviewed to ensure they can accommodate the larger trucks (per STAA). These routes allow larger trucks to travel between NN routes to reach the particular truck's base of operations or to reach locations where freight is loaded or unloaded. In advance of ramps or intersections, these routes are signed to advise truckers that the intersecting roadway is a TA route. The TA routes within the affected environment for transportation are listed below.

- SR 4 from the western edge of the affected environment (Antioch) to near Brentwood (Spruce Street/Second Street intersection).

- SR 4 from the Port of Stockton Expressway (Daggett Road) to SR 99.
- SR 12 from the SR 12/SR 113 intersection to SR 99 near Lodi.
- SR 113 from the SR 113/SR 12 intersection to Hastings Road.
- SR 113 from Dossier Railroad Crossing to I-80 in Dixon.
- SR 160 from the SR 160/SR 4 intersection to SR 160/Isleton Road intersection (at Bridge 24 0051) (Caltrans 2009g).

Upon examination of the TA routes within the affected environment for transportation, there are clear gaps, for example, on SR 113. In these gaps, two conditions may exist. First, the route may have been determined to be incapable of accommodating the larger trucks (according to STAA) but may accommodate the California Legal trucks; those routes form the California Legal Network. Second, trucks exceeding the posted KPRA advisory can legally use the route but are fully responsible for any off-tracking incidents (off-tracking is when a vehicle makes a turn and its rear wheels do not follow the same path as its front wheels). The following routes in the affected environment for transportation fall into one of these two categories.

- SR 4 from near Brentwood (Spruce Street/Second Street intersection to the Contra Costa-San Joaquin County boundary) is designated a California Legal Advisory route with an advisory maximum KPRA of 30 feet.
- SR 4 from the Contra Costa-San Joaquin County boundary to Tracy Boulevard is designated a California Legal Advisory route with an advisory maximum KPRA of 34 feet
- SR 4 from Tracy Boulevard to the Port of Stockton Expressway (Daggett Road) is a California Legal Network route.
- SR 113 from Hastings Road to Dossier Railroad Crossing is a California Legal Network route.
- SR 84 for a short distance (not explicitly noted on source maps) north of SR 12 is designated a California Legal Network route. Most of SR 84 is a California Legal Advisory route with an advisory maximum KPRA of 30 feet. The route designation ends where SR 84 is under local jurisdiction control in West Sacramento.
- SR 160 from the SR 160/Isleton Road intersection (Bridge 24 0051) to the SR 160/River Road intersection (Paintersville Bridge [Bridge 24 0053]) is designated as a California Legal Advisory Route with an advisory maximum KPRA of 30 feet.
- SR 160 from the SR 160/River Road intersection (Paintersville Bridge [Bridge 24 0053]) to where it passes under I-5 in Sacramento is a California Legal Network route.
- SR 220 for its entire length between SR 160 and SR 84 is designated a California Legal Advisory Route with an advisory maximum KPRA of 30 feet (Caltrans 2009g).

Caltrans does not have any posted weight limits on the state freight routes within the affected environment (Caltrans 2009h). Caltrans has discretionary authority to issue permits allowing vehicles exceeding statutory limits on vehicle size and weight to use state routes (Caltrans 2009i). Permits for trips in the affected environment for transportation are processed by the North Region Transportation Permit Office in Sacramento (Caltrans 2009j).

County/Local Truck Routes

Within the affected environment for transportation, only Sacramento and San Joaquin counties have published maps indicating the STAA routes inside their jurisdictions (Caltrans Website 2009f).

Sacramento County

Most of the designated truck routes in Sacramento County are located adjacent to the city of Sacramento and outside of the affected environment for transportation. The exception to this is a connection between I-5 and SR 160 through the community of Walnut Grove that is designated by Sacramento County as a STAA Truck Route. This route follows Walnut Grove/Thornton Road from the Sacramento-San Joaquin County boundary to River Road south of Walnut Grove. The designated county truck route follows River Road to its intersection with SR 160 at the Paintersville Bridge. The California Legal Network designation governs SR 160 from that point north to its intersection with Randall Island Road. Sacramento County designates Randall Island Road as a STAA Truck Route from its southern intersection with SR 160 for a short distance to the north (Sacramento County 2009b).

San Joaquin County

There are three STAA TA routes designated by San Joaquin County in the affected environment for transportation. One of these routes, Walnut Grove Road, provides the last leg of the freight connection between Sacramento County's designated route of Walnut Grove/Thornton Road and I-5. Another designated STAA TA route is Turner Road, which connects a freight facility at Villinger (adjacent to UPRR) to Turner Road at the city limits of Lodi. The third route is Eight Mile Road, which runs east from I-5 along the northern edge of Stockton (Caltrans 2009k).

19.1.2.4 Emergency Routes

Transportation facilities designated by a jurisdiction for the purposes of access or evacuation during emergencies are of heightened importance because effects on those facilities may be more significant due to their designated role in the maintenance of public health and safety. Table 19-7 summarizes the routes designated by Delta area counties as emergency routes.

Table 19-7. Emergency Routes in the Delta Area, by County

County	Designated Emergency Routes
Alameda	None identified
Contra Costa	Emergency routes are designated at the time of emergency by staff in the Emergency Operations Center in conjunction with Emergency Services
Sacramento	I-5, I-80, SR 50, SR 99, SR 160
San Joaquin	I-5, SR 4, SR 12, SR 26, SR 88, SR 99, SR 120
Solano	Emergency routes are designated at the time of emergency by staff in the Emergency Operations Center in conjunction with Emergency Services
Yolo	I-5, I-80, SR 84, SR 113, County Road 22, County Road 98

Sources: Clark pers. comm. 2009; Roseberry pers. comm. 2010; Sacramento County 2009c; San Joaquin County 2010; Solano County 2009; Yolo County 2009

Notes: I-5 = Interstate 5, I-80 = Interstate 80, SR = State Route

19.1.3 M5/580 Marine Highway Corridor

Marine facilities represent substantial transportation capacity within the Delta region. Navigable coastal waters parallel the entire I-5 corridor, including numerous deep and safe rivers, bays, and ports and serving as extensions of the surface transportation system, particularly for freight and goods movement. Figure 19-1 illustrates the location of the commercial ports, ferries, and bridges within the Delta vicinity. These include facilities that are part of the Marine Highway Program overseen by the U.S. Department of Transportation Maritime Division.[1]

Two designated Marine Highway (M-)corridors lie within the project vicinity, the M-5 corridor and the M-580 corridor.

- The M-5 corridor includes the Pacific Ocean coastal waters, connecting commercial navigation channels, ports, and harbors from San Diego to the US-Canada border north of Seattle. It spans Washington, Oregon and California along the West Coast. It connects to the M-84 corridor at Astoria, Oregon, and the M-580 Connector at Oakland.
- The M-580 corridor includes the San Joaquin River, Sacramento River, and connecting commercial navigation channels, ports, and harbors in Central California from Sacramento to Oakland. It connects to the M-5 Corridor at Oakland.

19.1.3.1 Port of Stockton

The Port of Stockton is located roughly 86 miles from San Francisco via rivers and shipping channels. Access to the facility is through the Suisun Bay, San Joaquin River, and the Stockton Deep Water Channel (Port of Stockton 2009a).

The facility covers 2,000 acres and is capable of loading and unloading 17 vessels at a time, storing 1.1 million square feet of dockside transit sheds and 7.7 million square feet of warehousing for dry bulk and general cargo. The Stockton Deep Water Channel has an average depth of 37 feet at average low tide and 40 feet at high tide. The maximum ton class for ship entry is 60,000, but larger vessels may transit the channel partially loaded. The port processed a total of 2,098,684 waterborne tonnage in 2008. (Port of Stockton 2009b).

The port is located approximately one mile from I-5 and is easily accessible by other major interstates in the region. It is served by two Class I rail companies, UPRR and BNSF. Rail service is also provided to each warehouse within the port facility by the port's railroad, operated by the Central California Traction Company (CCT) (described in 19.1.4, *Rail Facilities*).

19.1.3.2 Port of West Sacramento

The Port of West Sacramento is located in West Sacramento and is 79 nautical miles northeast of San Francisco via rivers and shipping channels. It is accessible by entering the Sacramento River Deep Water Ship Channel from Suisun Bay. The port specializes in importing and exporting agricultural products, including rice, fertilizer, grains, and lumber, as well as wind turbine parts. This port handles less volume than the Port of Stockton; the Port of West Sacramento processed a total of 852,849 waterborne tonnage in 2008 (Port of Stockton 2010b).

[1] The Marine Highway Program was fully implemented in April 2010 through publication of a Final Rule in the Federal Register (http://edocket.access.gpo.gov/2010/pdf/2010-7899.pdf). The Secretary's designations were made pursuant to the Final Rule, as required by the Energy Independence and Security Act of 2007.

Three rail companies serve the port with a 200-railcar terminal: BNSF, UPRR, and Sierra Northern Railway. The port has capacity for five 600-foot berths with a depth of 35 feet. It is located on approximately 150 acres at the terminal site, containing both developed and undeveloped land. The port is adjacent to I-80 and fewer than 2 miles from I-5. SR 84 is also located within one mile of the port.

19.1.3.3 Barge Traffic

Most barge traffic within the Delta region travels along the Sacramento River Deep Water Ship Channel, which begins in Sacramento and heads southwest toward Suisun Bay, where the canal ends. Once outside of the channel, ships use the Sacramento River for service to Sacramento or the San Joaquin River for access to the Port of Stockton.

19.1.3.4 Sacramento River Deep Water Ship Channel

The Sacramento River Deep Water Ship Channel connects the navigable portion of the Sacramento River at the Contra Costa County boundary to the marine terminal facilities of the Port of Sacramento, a distance of 46.5 miles (U.S. Army Corps of Engineers 2010). The current channel provides for a navigable depth of 30 feet; the Army Corps of Engineers has proposed to deepen the channel to a navigable depth of 35 feet (U.S. Army Corps of Engineers 2008).

19.1.3.5 Stockton Deep Water Channel

This navigable freight waterway connects the Disappointment Slough with the Port of Stockton marine terminal facilities (State Water Resources Control Board 2010), a distance of approximately 14 miles. The channel provides a navigable depth of 37 feet (Port of Stockton 2010a).

19.1.3.6 Various Ferry Services

Five public access ferry services operate within the Delta region (Figure 19-1). Two of the ferries act as a part of the California highway system and are operated by Caltrans. One of these ferries, the Howard Landing Ferry, is located on SR 220 and crosses the Steamboat Slough. The other ferry connects SR 84 in Solano County. The Ryer Island Ferry crosses the Cache Slough. The remaining three ferries transport passengers to private islands. One crosses the Little Connection Slough, another crosses the Middle River to Woodward Island, and the other travels from Jersey Island to both Webb Tract and Bradford Island (California Delta Chambers and Visitors Bureau 2009; California Department of Transportation 2009m).

Draw Bridges

Twenty-four draw bridges located throughout the Delta on both rail and road facilities are summarized in Table 19-8.

Table 19-8. Roadway and Rail Draw Bridges in Delta Area

Bridge ID	Bridge Name	Route	Span (feet)	Year Built	Bridge Type	Mean High Water (feet)	Mean Lower Low Water (feet)
22C0153	Sacramento River	"I" Street	853	1911	Swing	30	32
22 0021	Sacramento River (Tower Bridge)	SR 275	738	1934	Lift	30	32
24C0001	Sacramento River (Freeport)	Freeport	653	1929	Bascule	29	32
24 0053	Sacramento River (Paintersville)	SR 160	588	1923	Bascule	24	27
24 0052	Steamboat Slough	SR 160	343	1924	Bascule	21	24
23 0035	Miner Slough	SR 84	367	1933	Swing	17	21
24C0005	Sacramento River (Walnut Grove)	Walnut Grove Xing	302	1952	Bascule	21	24
24C0039	Georgiana Slough	Isleton Road	289	1962	Swing	14	17
29C0131	Mokelumne River (Millers Ferry)	Walnut Grove Road	239	1955	Swing	12	15
24 0051	Sacramento River (Isleton)	SR 160	624	1923	Bascule	15	18
24C0042	Georgiana Slough	Tyler Island Bridge Road	354	1940	Swing	10	13
29 0043	Mokelumne River	SR 12	1,436	1942	Swing	7	10
29 0101	Little Potato Slough	SR 12	2,980	1991	Swing	35	38
24 0121	Three Mile Slough	SR 160	749	1949	Lift	10	16
29C0219	White Slough (Honker Canal)	Eight Mile Road	479	1936	Swing	7	11
29C0114	Bishop Canal	Eight Mile Road	322	1989	Swing	NA	NA
29C0108	Middle River	Bacon Island Road	974	1995	Swing	9	12
29 0050	San Joaquin River (Garwoods)	SR 4	302	1933	Swing	NA	NA
29 0045	Old River	SR 4	528	1915	Swing	12	16
29 0049	Middle River (Santa Fe)	SR 4	547	1915	Swing	11	14
29C0022	Grant Line Canal	Tracy Boulevard	472	1959	Bascule	16	19
24C0053	Snodgrass Slough	Twin Cities Road	1,037	1931	Swing	12	18
24C0011	Sutter Slough	Sutter Slough BR Rd.	397	1939	Swing	NA	NA
29C0023	San Joaquin River	Navy Drive	272	1941	Swing	NA	NA

Sources: Boat Harbors 2009; Caltrans 2009c; Snug Harbor Resorts LLC 2009; T-Parks Marine 2010

Notes:

"Bridge ID" is a unique identifier for all bridges in the state bridge log. The first two digits indicate the county where the bridge is located (i.e., 33 = Alameda County, 28 = Contra Costa County, 23 = Sacramento County, 29 = San Joaquin County, and 22 = Yolo County). State-owned bridges have a space as the third character of the Bridge ID. County-owned bridges have a "C" as the third character. "Mean High Water" is the clearance underneath the bridge span to the top of the high water level when the bridge is in its operating position for the crossing road or rail facility. "Mean Lower Low Water" is the clearance underneath the bridge span to the top of the low lower water level when the bridge is in its operating position for the crossing road or rail facility.

NA = not available

SR = State Route

19.1.4 Rail Facilities

Northern California has a rail network that provides freight and passenger services to various points in the continental United States and within the region. California is served by two private, transcontinental railroad companies: Union Pacific Railroad (UPRR) and Burlington Northern Santa Fe Railway (BNSF). These two railroads own right-of-way and operate freight services over their own systems of main lines, branch lines, rail yards, and terminals. While the two railroads compete with each other for freight business, they also share routes and utilize each other's tracks under operating agreements.

In addition to providing freight services—with as many as 60 trains per day travelling over their respective routes—both railroads host extensive inter-city and long-haul passenger services that operate on their lines under agreement. The Capital Corridor passenger service between San José and Sacramento and the Amtrak long-distance interstate service are among these passenger operators (see 19.1.4.2, *Passenger Service*).

Railroads in the study area are shown in Figure 19-1.

19.1.4.1 Freight Service

Union Pacific Railroad

UPRR's Martinez Subdivision runs between Oakland and Roseville. The double-track route travels along the eastern shore of San Francisco Bay through Berkeley, Richmond, Hercules, and Martinez. At Martinez, the route crosses the Carquinez Strait and continues through the wetlands along Suisun Bay to Fairfield. From Fairfield, the route generally runs parallel to I-80 into Sacramento and then goes on to Roseville. The main line tracks cross over the Yolo Bypass Wildlife Area and the Sacramento and American rivers on the way to Roseville (Altamont Press 2009).

The UPRR Tracy Subdivision runs between Martinez and Tracy. Itgenerally runs inland of and parallel to the shoreline along Suisun Bay through Pittsburg, where the line turns southeast through Brentwood, Byron, and on to Tracy. While much of this line has not been in service recently, UPRR may return it to freight service in the future. Portions of the right-of-way may be used for the eBART extension in Contra Costa County (Altamont Press 2009).

Near Tracy, UPRR operates an intermodal yard at Lathrop. The UPRR facilities in the Delta have been designated in the 2025 Statewide Transportation Plan as a "Major International Trade Route" (Caltrans 2009e).

Burlington Northern Santa Fe Railway

The BNSF Railway main line follows an inland route between Richmond and Port Chicago. At Port Chicago, the BNSF main line and UPRR Tracy Subdivision cross, and the BNSF route continues along the shoreline of Suisun Bay and the western edge of the Delta to Oakley. There, the BNSF main line turns southeast towards Stockton, crossing over numerous Delta tracts and islands. At Stockton, the BNSF main line route runs down the Central Valley to Barstow and then east (BNSF 2009).

BNSF operates a large intermodal facility in Stockton called the Mariposa Intermodal facility. It is located east of SR 99 along Mariposa and Arch Road within the Stockton city limits. This site is capable of being expanded and providing opportunities for rail-related industrial development.

BNSF also has a smaller classification yard south of SR 4 near downtown Stockton. That facility is called the Mormon Yard for its location near the Mormon Slough (BNSF 2009).

BNSF facilities in the Delta have been designated in the 2025 Statewide Transportation Plan as a "Major International Trade Route" (Caltrans 2009e).

The Central California Traction Company

The CCT is a short-line railroad which operates in the Stockton area with connections to both UPRR and BNSF (Central California Traction Company 2009). CCT operates the Port of Stockton rail connecting the port to the BNSF main line.

19.1.4.2 Passenger Service

Passenger rail service within the Delta and adjacent areas is provided by Amtrak and the Altamont Commuter Express (ACE). The San Francisco Bay Area Rapid Transit District (BART) has a planned extension to Antioch in the transportation study area.

Amtrak

Amtrak provides passenger rail service between Stockton, Sacramento, and Oakland over tracks owned by UPRR and BNSF. Amtrak also connects these cities in the Delta area to points north, east, and south. Amtrak's service is provided by the routes:

- San Joaquin
- California Zephyr
- Capitol Corridor
- Coast Starlight

Each route has a different frequency of service and serves different markets. The California Zephyr and Coast Starlight routes are part of Amtrak's national service that spans the country, while the San Joaquin route is a northern California regional service. The Capitol Corridor route acts more like a commuter train (Amtrak 2009). These services may be affected if effects on water transportation results in an increase in freight rail use within the Delta which could result in impacts on passenger service provision.

The San Joaquin connects either Oakland or Sacramento with Bakersfield and passes through Stockton. There are four trains daily that start or end in Oakland and two trains daily that start or end in Sacramento (Amtrak 2009).

The California Zephyr starts at the Emeryville station and passes through Davis and Sacramento on its multiday trip to Chicago, Illinois. As part of the Amtrak national system, this route provides one trip in each direction daily. On the trip from the east to Emeryville, Amtrak does not pick up passengers in Sacramento or Davis. (Amtrak2009).

The Coast Starlight is the north–south equivalent of the California Zephyr. The Coast Starlight connects Los Angeles with Seattle, Washington through Oakland and Sacramento. Like the California Zephyr, the Coast Starlight operates as one northbound and one southbound train daily (Amtrak 2009).

The Capitol Corridor train service is primarily a commuter service connecting San José with Sacramento via Oakland. This service provides several trips per day with shorter headways (the time between trips on the same transit route) during the morning and evening peak travel demand periods (when compared with midday service). On the Capitol Corridor trains, reservations are not required and tickets can be purchased either at select stations or on the train. Over the course of the day, 16 trains operate in each direction between Oakland and Sacramento (Amtrak 2009).

Altamont Commuter Express

Altamont Commuter Express operates rail commuter service between Stockton and San José through Tracy at the southern end of the Delta. The trains operate in the westbound direction in the morning and in the eastbound direction in the afternoon (Altamont Commuter Express 2009).

San Francisco Bay Area Rapid Transit District

The San Francisco Bay Area Rapid Transit District (BART) currently operates a rapid transit rail line to its Pittsburg-Bay Point terminus station. Although the present BART line is not currently within the transportation study area, BART is currently planning a project that will extend BART service beyond the Pittsburg/Bay Point Station into the transportation study area. The extended track alignment will go down the median of SR 4, through Pittsburg and Antioch and terminate east of Hillcrest Avenue in Antioch just within the transportation study area. BART expects to complete the extension in 2015. [source: BART Website: November 10, 2011].

19.1.5 Air Transportation Facilities

Two commercial services airports and four general aviation airports are located within or adjacent to the Delta, shown in Figure 19-1.

19.1.5.1 Sacramento International Airport

The Sacramento International Airport (Federal Aviation Administration [FAA] identifier SMF) is owned and operated by Sacramento County and is located north and west of Sacramento on I-5. It has two parallel runways of approximately equal length (approximately 8,600 feet). For the 12 months ending in March 2009, the airport averaged 399 operations per day, with a majority being regularly scheduled commercial flights (69%), 15% being air taxi flights, 11% being general aviation flights based elsewhere, 3% being Sacramento-based general aviation flights, and 1% military flights (AirNav 2009a). Sacramento International Airport is the largest airport within or adjacent to the Delta that has regularly scheduled commercial passenger service.

Sacramento International Airport also serves as an air freight terminal. In the calendar year ending in December 2008, over 153 million pounds of air freight was handled at this airport. The volume of air freight declined by over 10% from calendar year 2007 (Sacramento County 2009d).

19.1.5.2 Stockton Municipal Airport

The Stockton Municipal Airport (FAA identifier SCK) is owned and operated by San Joaquin County and is located south of Stockton between the I-5 and SR 99 corridors. It has parallel runways, with one notably longer than the other. Runway 11L-29R is 10,650 feet long and Runway 11R-29L is 4,454 feet long. For the 12 months ending in January 2009, the airport averaged 175 operations per

day, with almost three-quarters being general aviation flights not based in Stockton (72%), 24% being Stockton-based general aviation flights, 3% being military flights, 1% being air taxi flights, and less than 1% being scheduled commercial flights (AirNav 2009b).

According to a press release, the airport was in the top third of all airports nationwide in freight volume in 2003 and 2004. Stockton Municipal Airport handled 30.3 million pounds of freight in 2003 and 33.8 million pounds of freight in 2004 (San Joaquin County 2009a).

19.1.5.3 Byron Airport

The Byron Airport (FAA identifier C83) is owned and operated by Contra Costa County. The airport is located between Byron and Tracy just south of Discovery Bay. The airport has a 4,500-foot main runway and a 3,000-foot crosswind runway. For the 12 months ending January 2004, Byron Airport recorded an average of 164 aircraft operations per day, with most (92%) of those being general aviation aircraft based at Byron and the balance (8%) being general aviation aircraft based elsewhere. No scheduled commercial flights depart from this airport (AirNav 2009c).

19.1.5.4 Rio Vista Municipal Airport

The Rio Vista Municipal Airport (FAA identifier O88) is owned and operated by the City of Rio Vista. This general aviation airport is located north and west of the city on SR 12. The main runway is 4,200 feet long, and there is a 2,200-foot crosswind runway. For 12 months prior to November 2008, there were 96 aircraft operations on average per day. Those operations were split evenly between general aviation aircraft based at Rio Vista and those based elsewhere. No scheduled commercial flights depart from this airport (AirNav 2009d).

19.1.5.5 Sacramento Executive Airport

Located in Sacramento between the I-5 and SR 99 corridors and directly on SR 160, Sacramento Executive Airport is owned by the City of Sacramento and operated by Sacramento County. The airport has three runways. The main runway is 5,503feet long and there are two shorter runways—crosswind Runway 12–30 (3,826 feet long) and Runway 16–34 (3,485 feet long). For 2004, the airport had an average of 370 aircraft operations per day. These operations were primarily visiting general aviation (59%). Aircraft based at the airport were 29%, and air taxi operations (unscheduled charter passenger or freight service flights) constituted 11% of the operations. A small number of flights were military in nature (2%) (AirNav 2009e).

19.1.5.6 Tracy Municipal Airport

The City of Tracy owns and operates this general aviation airport (FAA identifier TCY) located at the southern edge of the city in the southern portion of the "Tracy Triangle" formed by I-5, I-205, and I-580. It has two runways of similar length: Runway 8–26 is 4,005 feet long and Runway 12–80, is 4,001 feet long. For the 12 months ending April 2008, Tracy Municipal Airport averaged 164aircraft operations a day, with 65% of those operations being general aviation aircraft not based at the airport. The balance was airport-based general aviation aircraft (35%) with less than 1% being air taxi operations (City of Tracy 2009; AirNav 2009f).

19.1.6 Transit Facilities

19.1.6.1 Intercity Transit

Greyhound Bus Lines

Greyhound Bus Lines operate regularly scheduled intercity bus service in the vicinity of the Delta between the cities of Oakland, Sacramento, Stockton, and points beyond using I-80, I-580/I-205, I-5, and SR 99 (Greyhound Bus Lines 2009a). Between seven and nine bus trips are scheduled daily between these cities. Some of these are express trips that do not stop in intervening cities served by Greyhound. For example, of the nine trips daily between Oakland and Sacramento, four stop in Vacaville while five stop in Suisun City. In the case of the seven daily trips between Oakland and Stockton, only two stop in Tracy (one trip very early in the morning and one in the late afternoon). For the trips between Stockton and Sacramento, two of the eight daily trips stop in Lodi (Greyhound Bus Lines 2009b).

Intra-City and Intra-County Bus Transit

Within the cities of the Delta, a variety of intra-city and/or intra-county transit services is provided. Some of these transit operators also provide short distance intercity service. Transit agencies serving the study area with bus services include TriDelta Transit, South County Transit (SCT), and Rio Vista Transit. Transit routes in the study area areillustrated in Figure 19-1.

19.2 Regulatory Setting

This section describes federal, state, regional, and local agencies and applicable transportation regulatory requirements for the proposed project.

19.2.1 Federal Plans, Policies, and Regulations

19.2.1.1 Federal Highway Administration

The Federal Highway Administration (FHWA) coordinates highway transportation in cooperation with states and other partners to enhance the country's safety, economic vitality, quality of life and the environment. Among the program areas of the FHWA is the Federal-Aid Highway Program, which provided federal financial assistance to states for construction and improvement of the National Highway System (NHS), urban and rural roads, and bridges. This program provides for general improvements and development of safe highways and roads.

Nationally, the NHS has over 163,000 miles of roadway but that system is only four 4% of road miles but it carries approximately 45% of the traffic volume (Federal Highway Administration 2010).

19.2.1.2 Federal Aviation Administration

The Federal Aviation Administration (FAA) is the agency of the U.S. Department of Transportation charged with regulating air commerce to promote its safety and development; achieving the efficient use of navigable airspace of the United States; promoting, encouraging and developing civil aviation;

developing and operating a common system of air traffic control and air navigation for both civilian and military aircraft; and promoting the development of a national system of airports.

Under the provisions of the FAA for the development and operation of the common air traffic control system, airports operate under the authority and guidance of the FAA. Any potential project-related effect on aviation and any measures to address such effects would be subject to the regulations of the FAA (Federal Aviation Administration 2010).

19.2.1.3 Rivers and Harbors Act of 1899

The Rivers and Harbors Act of 1899, Section 10 requires that all obstructions to the navigable capacity of navigable waters of the United States must be authorized by Congress. The U.S. Army Corps of Engineers (USACE) must authorize any construction outside established harbor lines or where no harbor lines exist. USACE must also authorize any alterations within the limits of any breakwater or channel of any navigable water of the United States (U.S. Fish and Wildlife 2010).

19.2.1.4 United States Coast Guard

Title 14 of the United States Code (USC), and Title 33, and other portions of the Code of Federal Regulations (CFR) give the U.S. Coast Guard authority for maritime law enforcement on the navigable waters of the United States, as well as responsibilities for search and rescue, among other roles. Specific to the Delta, Title 33: Navigation and Navigable Waters, Part 162: Inland Waters Navigation Regulations, provides regulations for the navigation by both commercial and noncommercial vessels on the San Joaquin River Deep Water Ship Channel (between Suisun Bay and Stockton), and the Sacramento River Deep Water Ship Channel (between Suisun Bay and West Sacramento).

19.2.2 State Plans, Policies, and Regulations

19.2.2.1 California Department of Transportation

Caltrans has regulatory authority over the statehighway system. Additionally, under a pilot program established by the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), Section 6005(a), Caltrans and the FHWA have entered into a Memorandum of Understanding (MOU) under which certain authority under NEPA has been delegated to Caltrans in connection with the delivery of transportation projects (Federal Highway Administration-California Department of Transportation 2009). This MOU may apply to any potential effects to the state highway system from the proposed project.

As with other jurisdictions responsible for the roadway system, Caltrans regulatory concerns are likely to include:

- Construction vehicle movement to and from a project site where such movements include state highway system roadways (or cross those same roadways) and the potential effect of heavy vehicle movement on traffic operations, safety, or pavement condition
- Any possible geographic displacement or interruption of the state highway system as a result of the proposed project

- Post-construction traffic related directly to the proposed project continuing operation where such traffic uses state highway system roadways and the potential impact on traffic operations and safety

The traffic operations assessment, as discussed below under the Regional and Local Plans, Policies, and Regulations section, will be based on the resulting level-of-service (LOS) for state highways affected by project-related traffic and would be subject to Caltrans adopted standards (LOS "C" or "D" depending on facility).

19.2.3 Metropolitan Planning Organizations

Metropolitan planning organizations (MPO) coordinate transportation analysis, standards, and Federally funded capital investment across a number of transportation system owners and operators (e.g., state, counties, cities, and transit operators). There are three MPOs in the affected environment area (Figure 19-2):

- Metropolitan Transportation Commission (MTC)
- Sacramento Area Council of Governments (SACOG)
- San Joaquin Council of Governments (SJCOG)

19.2.3.1 Metropolitan Transportation Commission

MTC is the transportation planning, coordinating, and financing agency for the nine-county San Francisco Bay Area, which includes Alameda, Contra Costa, and Solano counties in the Delta area. The MTC developed the current Transportation Improvement Program (TIP), which programs funds for the federal fiscal year (FY) 2008–2009 through FY 2011–2012. The MTC planning region includes nine roadway and transit improvement projects within the Delta area—three of which are federally funded (Metropolitan Transportation Commission 2009). None of these projects are expected to be affected by the project alternatives.

19.2.3.2 Sacramento Area Council of Governments

SACOG oversees Sacramento and Yolo counties in the Delta area, including the cities of West Sacramento, Elk Grove, and Galt. SACOG developed the 2009–2012 Metropolitan Transportation Improvement Program, which identifies 30 roadway and transit projects, including nine federally funded projects in the Delta area (Sacramento Area Council of Governments 2009). None of these projects are expected to be affected by the project alternatives.

19.2.3.3 San Joaquin Council of Governments

SJCOG oversees an eight-county region in the San Joaquin Valley, which includes San Joaquin County in the Delta area. SJCOG developed the current Federal Transportation Improvement Program, which covers FY 2008–2009 through 2011–2012. SJCOG planning region includes roadway and transit improvement projects within the Delta area that are federally funded (San Joaquin Council of Governments 2009). As with other MPOs, none of these projects are expected to be affected by the project alternatives.

19.2.4 Regional and Local Plans, Policies, and Regulations

19.2.4.1 Levels of Service

For the roadway transportation system, the assessment of potential effects is generally based upon the change in the roadway operation with the addition of alternative-related traffic. The change is measured against the jurisdiction's adopted minimum operating characteristic—typically, "level of service" (LOS) as expressed either in a letter grade (where "A" is the best possible LOS and "F" is the worst possible LOS) or in a numeric fraction representing the amount of roadway capacity consumed by the transportation demand (the volume-to-capacity ratio, or v/c). The minimum acceptable operating condition of roadways for the state highway system, county, and city roads are presented by jurisdiction in Table 19-9.

It should be recognized that besides the level-of-service standards that may govern the determination of impacts, local jurisdictions may through project-specific negotiation enforce standards related to the design and provision of improvements that would necessitate project-specific improvements to address impacts.

Table 19-9. Level-of-Service Standards by Jurisdiction

County/City	Level-of-Service Standard
Sacramento County	LOS "D" for Rural collectors LOS "E" for Urban area roads
City of Elk Grove	LOS "D"
City of Galt	LOS "E" on all streets and intersections within a quarter-mile of SR 99, along A Street and C Street between SR 99 to the railroad tracks, and along Lincoln Way between Pringle Avenue to Meladee Lane. LOS "D" on all other streets and intersections.
City of Sacramento	LOS "D" for areas outside of Multi-Modal Districts. LOS "E" for Multi-Modal Districts. LOS "F" is acceptable during peak hours in the Core Area bounded by C Street, the Sacramento River, 30th Street and X Street.
Contra Costa County	Signalized intersections on non-regional routes have LOS and v/c standards depending on location: Rural – LOS "C" and 0.70–0.74 v/c Semi-Rural – LOS "C" and 0.75–0.79 v/c Suburban – LOS "D" and 0.80–0.84 v/c Urban – LOS "D" and 0.85–0.89 v/c CBD – LOS "E" and 0.90–0.94 v/c
City of Antioch	LOS "D" (v/c = 0.85 – 0.89) within regional commercial areas. LOS "D" (v/c = 0.80 – 0.84) in all other areas, including freeway interchanges.
San Joaquin County	LOS "D" with some recognized existing deficiencies from the date of policy adoption.
City of Lodi	LOS "D" LOS "E" during peak hour conditions for purposes of design review and environmental assessment.
City of Manteca	City-wide average of LOS "C" Minimum LOS "D" at individual locations where attaining LOS "C" is unreasonably expensive or difficult to maintain due to surrounding facilities in other jurisdictions operating at LOS "D" or worse.
City of Stockton	LOS "D"

County/City	Level-of-Service Standard
City of Tracy	LOS "C" LOS "D" within one-quarter mile of any freeway. LOS "E" in Downtown and Bowtie area.
Solano County	LOS "C"
City of Dixon	LOS "C"
City of Fairfield	Local Streets – LOS "B" Collector Streets – LOS "C" Arterial Streets – LOS "D"
City of Rio Vista	LOS "D" LOS "E" for the downtown and neighborhood commercial areas. LOS "E" for Main and Front Streets between Main Street and SR 12.
City of Suisan City	LOS "C"

Sources: Caltrans 2009l; City of Antioch 2010; City of Dixon 2010; City of Elk Grove 2009; City of Fairfield 2010; City of Galt 2010; City of Lodi 2010; City of Manteca 2010; City of Rio Vista 2010; City of Sacramento 2010; City of Stockton 2010; City of Suisan City 2010; City of Tracy 2010; Contra Costa Transportation Authority 2009; Kokkinis pers. comm. 2009; Sacramento County 2004; Sacramento County 2010; San Joaquin County 2009b; Solano County 2009

Notes:
LOS = level-of-service
SR = State Route
v/c = volume-to-capacity ratio

19.2.4.2 Delta Protection Commission's Land Use and Resource Management Plan

The Delta Protection Act of 1992 (Act) established the Delta Protection Commission (DPC), a State entity to plan for and guide the conservation and enhancement of the natural resources of the Delta, while sustaining agriculture and meeting increased recreational demand. The Act defines a Primary Zone, which comprises the principal jurisdiction of the Delta Protection Commission. The Act requires the Commission to prepare and adopt a Land Use and Resource Management Plan[2] for the Primary Zone of the Delta, which must meet specific goals.

The Utilities and Infrastructure section includes the following relevant policy:

> P-5. Maintain roads within the Delta to serve the existing agricultural uses and supporting commercial uses, recreational users, and Delta residents. Promote the maintenance and enhancement of major thoroughfares already used as cross-Delta corridors.

[2] Delta Protection Commission. 1995. Land Use and Resource Management Plan. < http://www.delta.ca.gov/Land%20Use%20and%20Resource%20Management%20Plan%20for%20the%20Prim.htm>. Accessed October 2011.

19.3 Environmental Consequences

19.3.1 Methods for Analysis

[*Note to reviewers: The analysis in this chapter was based on project information in the CERs, responses to requests for information on air quality, and other data provided by DWR. GIS data, including the location and footprint of the BDCP alternatives, were unavailable during chapter preparation and will be incorporated for the administrative draft submittal. New information and further analysis could change the details and conclusions provided in this chapter, including the traffic counts and level of service analysis to be conducted.*

The following assumptions were used in developing this preliminary analysis.

- ***Construction***
  - *Study locations were limited to highway segments along likely construction haul routes in the areas of intake construction (SR 160, SR 84, other highways connecting to I-5 interchanges).*
  - *Identification of potential haul routes was based on the December 29, 2010, map books of the conveyance options.*
  - *Additional locations will be studied as updated engineering and design information is made available and the traffic analysis is refined and expanded.*
  - *Likely construction haul routes and worker commuting routes were identified based on the shortest path to I-5 interchanges. These routes are subject to change based on updated engineering and design information. For each construction site, it was assumed that all workers would use the same route, and that all construction trucks would use the same route.*
  - *All workers were assumed to drive their own car and commute during peak hours.*
  - *The numbers of construction workers were derived from estimates provided in responses to requests for information (RFIs) 187–194. Spreadsheets provided total number of workers required for each project construction element (e.g., intakes, pumping plants, pipelines).*
  - *50% of the total workforce required for each project component were assumed to be onsite during the peak construction period.*
  - *All construction activities were assumed to occur simultaneously for the various project elements affecting studied locations.*
  - *The number of truck trips / daily trips associated with construction activities for intakes was based on the response to RFI 164, which addressed intakes. Estimates of truck trips for other project components were derived from the intake estimates in response to RFI 164 by applying a coefficient reflecting the respective total truck hours of operations (taken from the responses to RFIs 187–194).*
  - *15% of the daily construction truck traffic was assumed to occur during the peak hour.*
  - *Each truck was assumed to represent 3.5 passenger vehicles for the capacity analysis.*
- ***Operations and Maintenance***

- *Weekly operations and maintenance activities would require approximately 50 workers (including maintenance crew, management, repair crew, pumping plant crew, and dewatering crew); major inspections would mobilize about 11 people.*]

This section presents the methods used to conduct the impact analysis for transportation. All transportation modes (roadways, navigation, transit services, rail, and bicycles) are addressed in the analysis. For each transportation mode, temporary impacts during construction and permanent impacts during operations are evaluated. The impact mechanisms and approach to analysis for each transportation mode are discussed below.

- **Road Transportation.** Potential impacts on roadways could result from increased volumes and delays during construction, inability to maintain access and roadway connectivity, deterioration of the roadway surface, increased traffic hazards, and interference with emergency management and evacuation routes.

  - **Increased Volumes and Delays during Construction.** During construction, temporary impacts on roadways could result in circulation delays or the inability to maintain adequate vehicular access in or around construction work zones. The assessment of construction-related traffic impacts involves estimating vehicle trips generated from construction activities (materials movement and employee trips) and identifying the most likely routing of construction traffic.

    An estimate of the peak-hour construction-generated traffic was based on the conceptual project design information for each alternative. The proposed construction schedule for each alternative was used to determine when construction traffic would be expected to occur and which activities would occur simultaneously. Traffic volume estimates are based on estimates of quantities of construction materials. Estimates of daily construction-related trips were based on workforce numbers and truck trips for cut-and-fill activities and concrete hauling.

    The final routing of construction-related traffic will be determined by the construction contractors. Likely haul routes were identified by applyingthe constraints listed below.

    - Minimize distance between the construction sites and the nearest interstate highway.
    - Use designated truck routes whenever possible.
    - Avoid urban areas (Sacramento, Stockton, Tracy).
    - Avoid roadways with constrained alignments.
    - Avoid ferry crossings.

  - **Access and Roadway Connectivity.** The analysis involves identifying temporary and permanent alterations of the roadway system that could result in a loss of connectivity or the inability to maintain roadway access to certain areas. Provisions of temporary and permanent detours, roadway realignments, and new bridges to be built under the alternatives are described.

  - **Roadway Surfaces.** Truck traffic associated with construction of the project components could result in damages to the roadway surfaces.

  - **Traffic Hazards.** Safety hazards could result from maneuvering of construction-related vehicles and equipment among general-purpose traffic on public roads.

- **Emergency Management.** Construction detours and delays could result in longer, unacceptable response times by emergency service providers or the inability to maintain adequate vehicular access to certain geographical service areas.

- **Marine Transportation.** Construction of BDCP facilities could directly affect marine transportation in two ways: (1) project-related materials delivery could result in an increase in barge traffic, and (2) in-water construction activities related to the intake facilities could present obstacles to boats and other marine vehicles. Both circumstances could result in reduced waterway capacity and increased safety conflicts during construction.

- **Rail Transportation.** The methods for assessing the potential impact of the alternatives on existing rail facilities entails a comparison of each alternative's proposed alignment with the location of the existing rail facilities. Where a rail crossing is expected, the alternative's conceptual engineering plans were examined for consideration of that crossing, as well as any impacts on ongoing rail operations following construction of the alternative.

- **Air Transportation.** Potential impacts on air transportation involve the risk of increased aircraft-bird strikes as a result to the proposed restoration activities. To assess the potential effect on public-use airports and effects by bird strikes, the location of conceptual wetland areas proposed under a given alternative were compared to the location of public-use airports.

- **Transit Services.** Estimates of impacts on transit facilities were based on an assessment of transit routes that may be affected by roadway congestion during construction and postconstruction operation.

- **Bicycle Facilities.** Estimates of impacts on bicycle facilities were based on an assessment of major bicycle routes, such as those on state highways and separate bicycle paths, that may be affected by increased truck traffic and roadway congestion during construction and postconstruction operation.

- **Cumulative Impacts on Transportation.** In addition to direct and indirect effects, this chapter contains an analysis of the cumulative effects specific to transportation. Cumulative impact assumptions include programs, projects, and policies and reasonably foreseeable probable future programs and projects (see Appendix ___ for a list of the programs, projects, and policies considered in the cumulative analyses).

19.3.2 Determination of Adverse Effects

Adverse effects were determined by comparing the anticipated changes in baseline (2009) conditions in the transportation system that would result from construction and operation of the alternatives.

Potential transportation impacts were assessed in relation to relevant thresholds of significance established by agencies with jurisdictional authority, and/or applicable laws and regulations. An effect was considered to be adverse if it would result in any of the following conditions.

- Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the roadway system.
- Substantially increase traffic delays experienced by drivers.
- Substantially alter present patterns of circulation or movement.
- Cause a substantial deterioration of the roadway surface due to construction activities.

- Cause traffic hazards to pedestrians or operators of motor vehicles or bicycles
- Interfere with emergency management and evacuation routes.
- Conflict with adopted policies, plans, or programs supporting alternative transportation (bicycles and transit services).
- Disrupt marine traffic during construction or operations.
- Disrupt rail traffic during construction or operations.
- Disrupt air traffic during construction or operations.

19.3.3 Effects and Mitigation Approaches

19.3.3.1 No Action Alternative

Under the No Action Alternative, the present patterns of circulation and movement would continue. Traffic congestion is likely to increase in future years as growth occurs in the Bay Area and the Central Valley. There would be no project-related change in the characteristics of the transportation systems over state highways, local roadways, or navigation through Delta channels in the MTPs or RTP. No intake facilities or conveyance systems would be constructed that could result in short-term conflicts with users of the transportation corridors in the Delta. Activities associated with operations and maintenance of the existing SWP and CVP systems and facilities upstream of the Delta would continue, but there would be no changes attributable to the BDCP that could affect transportation systems in these areas. Conservation measures such as restoration of wildlife habitat in Suisun Marsh would not take place, although restoration actions could be undertaken as part of other actions. There would be no project-related change in the characteristics of the transportation systems in the study area and thus there would be no adverse effects.

CEQA Conclusion: Under the No Action Alternative, there would be no project-related change in the characteristics of the transportation systems over state highways, local roadways, or navigation in the transportation study area and thus no Plan-related impacts would occur. No mitigation is required.

19.3.3.2 Alternative 1A

Impact TRANS-1: Increased traffic volumes and delays, and alteration of traffic patterns during construction

A total of five intakes would be constructed under Alternative 1A. For the purposes of this analysis, Alternative 1A was assumed to entail construction of Intakes 1–5. This alternative would also include an Intermediate Forebay, and the conveyance facility would be a buried pipeline (Figures 3-2 and 3-3). Table 19-10 shows potential LOS effects on locations in the transportation study area from construction of the alternatives featuring the pipeline/tunnel conveyance (i.e., Alternatives 1A, 2A, 3, 4, 5, 6A, 7, and 8).

[Note to reviewers: this information will be updated following the LOS analysis]

Table 19-10. Potential LOS Effects from Alternatives 1A, 2A, 3, 4, 5, 6A, 7, and 8

Location	LOS					
	Alt 1A	Alt 2A	Alt 3	Alt 4	Alt 5	Alt 7-8
SR 160 n/o Freeport Bridge Road	C	C	B	C	B	C
SR 160 n/o Hood/Franklin Road	B	B	B	B	B	B
SR 160 s/o Hood/Franklin Road	E	C	C	C	C	D
SR 160 n/o Paintersville Bridge	B	B	B	B	B	B
SR 160 n/o Walnut Grove Bridge	B	B	B	B	B	B
SR 160 in Isleton	B	B	B	B	B	B
SR 160 at CC/S County Line	B	B	B	B	B	B
Hood Franklin Road	F	D	D	D	C	E
Twin Cities Road	B	B	C	C	C	B
Walnut Grove—Thornton Road	C	C	C	C	C	C
SR 84 at S/Y County Line	A	A	A	A	A	A
SR 84 at Courtland Road	A	A	A	A	A	A
SR 84 at Courtland Road	A	A	A	A	A	A
SR 84 at Babel Slough Road	A	A	A	A	A	A
SR 84 at end of SR 84	A	A	A	A	A	A

Estimates of Construction-Generated Traffic

A substantial number of workers would travel to and from construction sites during the assumed 9-year construction period. Transporting borrow and spoil materials, as well as construction materials, would increase the number of large vehicles requiring access to and from the construction area. Table 19-11 shows estimated numbers of vehicles generated by construction activities under Alternative 1A .

Table 19-11: Estimated Number of Construction Workers and Truck Traffic for Alternative 1A

Feature	Number of Workers[a]	Workers Peak Hr Veh[b]	Total Truck Hours of Operations[c]	Total Truck Trips[d]	Truck Trips/ Day[d]	Truck Trips/ Peak Hr[e]	Total Peak Hour Vehicles[f]
Five intakes	1,027	514	107,644	23,595	259	39	649
Pumping plants	2,648	1,324	829,244	181,766	1,995	299	2,371
Pipelines	1,266	633	16,647	3,649	40	6	654
Tunnels	158	79	-	-	-	-	79
Forebays	1,465	733	78,863	17,286	190	28	832
Total	6,564						

[Notes to reviewers: table based on following data sources or assumptions]

[a] Number of workers from RFI 186 – PTO.

[b] Assuming each worker drives his/her own vehicle during the peak hour; assuming 50% of workers present onsite at peak construction period.

[c] From RFI 187–194 (highway vehicles only).

[d] From RFI 164 (intakes only); other project activities derived from intakes, assuming same rate of trips/hr of operations.

[e] Assuming that 15% of the daily truck trips occur during the peak hour.

[f] Truck trips are multiplied by 3.5 to obtain passenger car equivalent.

Construction Access Roads

Construction access roads include temporary access roads for onsite movement of equipment and personnel, temporary access roads used as detours and reroutes for public access, and potential haul routes on existing roadways for movement of materials, equipment, and personnel to and from outside the conveyance plan area. Temporary access roads will be two types: all-weather roads and existing public and private roads. The issue of dust abatement will need to be addressed in all construction areas at all times (see Chapter 22, *Air Quality and Greenhouse Gas Emissions*, for more discussion).

All-weather roads (asphalt paved) will be required for year-round construction at all facilities (e.g., concrete and steel structures, tunnel portals, tunnel shafts, pumping plants and intakes) and for access to delivery areas and permanent tunnel muck spoil piles. Asphalt-paved temporary access roads will be utilized throughout the work areas. Asphalt-paved temporary access ramps will be constructed to connect to the existing roadways at the existing grade.

Existing public and private roads will be used, as needed, for year-round access to all the construction areas. The final routing of construction-related traffic will be determined by the construction contractors. Likely haul routes were identified by applying the constraints listed below.

- Minimize distance between the construction sites and the nearest interstate highway.
- Use of designated truck routes whenever possible.
- Avoid urban areas (Sacramento, Stockton, Tracy).
- Avoid roadways with constrained alignments.
- Avoid ferry crossings.

The potential haul routes are shown in Table 19-12. The table is organized around the main construction sites. *[Note to reviewers: Haul route information is preliminary and will be updated if more information becomes available.]*

Table 19-12: Potential Haul Routes for Alternatives 1A, 2A, 3, 4, 5, 6A, 7, and 8

Facility or Work Area*	Haul Routes	Designated Truck Routes	Notes
Intakes 1–5	(1) SR 160; Hood Franklin Road; I-5	SR 160 only (California Legal Network Route)	shorter to I-5, but Hood Franklin Road is not a designated truck route
	(2) SR 160 to Pocket Road; I-5	SR 160 between Paintersville Bridge and where it passes under I-5 in Sacramento is a California Legal Network Route	longer to I-5, but mostly on designated truck route
Forebay	(1) Lambert Road; SR 160; Hood Franklin Road; I-5	SR 160 only (California Legal Network Route)	shorter to I-5, but Hood Franklin Road is not a designated truck route
	(2) Lambert Road; SR 160 to Pocket Road; I-5	SR 160 between Paintersville Bridge and where it passes under I-5 in Sacramento is a California Legal Network Route	longer to I-5, but mostly on designated truck route
Northernmost Tunnel Work Area	(1) Alfalfa Plant Road; Herzog Road; Lambert Road; SR 160; Hood Franklin Road; I-5	SR 160 only (California Legal Network Route)	shorter to I-5, but Hood Franklin Road is not a designated truck route
	(2) Alfalfa Plant Road; Herzog Road; Lambert Road; SR 160 to Pocket Road; I-5	SR 160 between Paintersville Bridge and where it passes under I-5 in Sacramento is a California Legal Network Route	longer to I-5, but mostly on designated truck route
Vorden Shaft	Vorden Road; River Road; Twin Cities Road; I-5	None	Alternatives using truck routes would be via north on SR 160 to Sacramento, or south to Walnut Grove Road
Leary Road Work Area	Leary Road; SR 160; Paintersville Bridge; SR 160	SR 160 between Paintersville Bridge and where it passes under I-5 in Sacramento is a California Legal Network Route	Two alternatives to reach I-5 from Hood. See above
Isleton Road Shaft	Isleton Road; Isleton Road bridge; River Road; Walnut Grove Thornton Road; Walnut Grove Road; I-5	River Road; Walnut Grove Thornton Road; Walnut Grove Road; I-5 is a designated truck route (STAA) by Sacramento County and San Joaquin County	

Facility or Work Area*	Haul Routes	Designated Truck Routes	Notes
Georgiana Slough Work Area	Unnamed road east of Georgiana Slough; Race Track Road; Walnut Grove Thornton Road; Walnut Grove Road; I-5	River Road; Walnut Grove Thornton Road; Walnut Grove Road; I-5 is a designated truck route (STAA) by Sacramento County and San Joaquin County	
Tyler Island Shaft	Tyler Island Road; Race Track Road; Walnut Grove Thornton Road; Walnut Grove Road; I-5	River Road; Walnut Grove Thornton Road; Walnut Grove Road; I-5 is a designated truck route (STAA) by Sacramento County and San Joaquin County	
Tyler Island Work Area	Tyler Island Road; Race Track Road; Walnut Grove Thornton Road; Walnut Grove Road; I-5	Walnut Grove Thornton Road; Walnut Grove Road; I-5 is a designated truck route (STAA) by Sacramento County and San Joaquin County	
South Tyler Island Shaft	Tyler Island Road; Race Track Road; Walnut Grove Thornton Road; Walnut Grove Road; I-5	Walnut Grove Thornton Road; Walnut Grove Road; I-5 is a designated truck route (STAA) by Sacramento County and San Joaquin County	
Staten Island Work Area	Unnamed road to N Staten Island Road; N Staten Island Road; Walnut Grove Road; I-5	Walnut Grove Road; I-5 is a designated truck route (STAA) by San Joaquin County	
Bouldin Island Shaft and Work Area	SR 12; I-5	SR 12 is a Terminal Access (STAA) Route	
Venice Island Shaft	Venice Island levee road; Little Connection Slough (cable ferry); Empire Tract Road; 8 Mile Road; I-5		Cable Ferry at Little Connection Slough
Mandeville Island Work Area & Shaft	Bridge to S. Bacon Island Road; then bridge to Bacon Island Road; Bacon Island Road to SR 4; then I-5	SR 4 (California Legal Network between Tracy Blvd and Dagget Road, then Terminal Access STAA to I-5)	2 bridges
Bacon Island work areas and shafts	East to S Bacon Island Road, then bridge to Bacon Island Road; then Bacon Island Road to SR 4, I-5	SR 4 (California Legal Network between Tracy Blvd and Dagget Road, then Terminal Access STAA to I-5)	1 bridge

Facility or Work Area*	Haul Routes	Designated Truck Routes	Notes
Woodward Island work area	Unnamed road north of Wodward Canal, Woodward island Ferry, Bacon Island Road to SR 4, I-5	SR 4 (California Legal Network between Tracy Blvd and Dagget Road, then Terminal Access STAA to I-5)	Woodward Island Cable Ferry
Victoria Island shaft and work area near SR 4	East to SR 4 intersection	SR 4 (Ca Legal advisory route to Tracy Blvd; California Legal Network between Tracy Blvd and Dagget Road, then Terminal Access STAA to I-5)	
Victoria Island south shaft	New access road to SR 4	SR 4 (CA Legal advisory route to Tracy Blvd; California Legal Network between Tracy Blvd and Dagget Road, then Terminal Access STAA to I-5)	
Clifton Work area	East to Clifton Court Road (bridge); south on S Tracy Blvd; I-205	I-205 (National Network)	1 bridge
Clifton Court Forebay	Byron Highway (County Hwy J4); W Grant Line Road; I-205	I-205 (National Network)	

Effects on Capacity

The majority of both employee and material-hauling trips on roadways are assumed to use I-5 for regional access. Fewer employees and materials are assumed to come from the Bay Area; these would likely use I-80, I-580, I-205, SR 4, and SR 12 to access the construction area.

Important roadway freight routes within the Plan Area include I-5, I-80, I-580, and I-205. Daily truck and passenger vehicle travel on these major routes would increase throughout the construction period. Although it is unlikely that these increases would cause substantial adverse effects on the main freeway segments, there could be substantial, localized congestion effects at interchanges, particularly at peak hours in the vicinity of construction areas.

From these major circulation networks, construction-related traffic would use the local roads to access the construction areas (Table 19-12). Daily trips would be expected to be distributed among different work areas along the alternative alignment. However, the increase in traffic volumes on local transportation networks would be substantial, and would generate delays and adverse effects on turning movements at intersections and interchanges.

[*Note to reviewers: This discussion will be updated with information from the background traffic impact analysis to be conducted, including the distribution of traffic and quantification of construction traffic anticipated at key locations during peak construction periods*]

Effects on Access and Mobility

Temporary access roads would provide access to construction traffic and accommodate through traffic during construction. Except for the intakes, Alternative 1A would not involve surface intersections with public roadways, and impacts on access and mobility would be primarily focused on the intake areas. No new bridges would be required under this alternative. Permanent changes to the roadway system are discussed under Impact TRANS-10 (Permanent alteration of transportation patterns during operations).

Depending on which intake locations are selected, SR 160 (Intakes CER 1–5 and Alts 1–5), River Road (Intakes 6 and 7), and Randall Island Road (Intake Alt 5) would require temporary detour roads during construction of the intakes. Each intake /pumping plant site would have a paved two-lane, two-way temporary detour road around the perimeter of the site's temporary construction fencing. The alignments of the temporary roads are assumed to use a design speed of 50 mph or less.

The temporary roads would be one of the first elements constructed at each site, while the existing levee roads are still in use. Temporary impacts on roadways are summarized in Table 19-13. Once the levee roads are blocked off and closed to through traffic (the levee roads may still be used for construction traffic as needed), the temporary roads will be opened to accommodate through traffic. The temporary roads may also be used for construction traffic as needed. Once the realigned levee roads are complete and opened to through traffic, the temporary roads will be removed when no longer needed.

Table 19-13. Temporary Impacts on Public Roadways for Alternatives 1A, 2A, 3, 4, 5, 6A, 7, and 8

[Note to reviewers: This table is consistent with updated engineering drawings available in GIS (Revision 9) Haul Routes information will be updated if more information becomes available.]

Roadway	Conveyance Facility in or adjacent to Roadway	Construction Crosses Roadway	Haul Routes	Roadway Modifications
SR 160	X	X	X	Temporary realignment during construction; Permanent realignment during operations
Randall Island Road	X	X	X	Temporary realignment during construction; Permanent realignment during operations
Scribner Road		X		
Hood Franklin Road		X	X	
Lambert Road	X	X	X	Permanent access road
Wilson Road	X	X	X	
Russel Road		X		
Alfafa Plant Road			X	
Vorden Road		X	X	Permanent access road
River Road			X	
Leary Road			X	
Isleton Road		X	X	Permanent access road
Andrus Island Road		X		

Roadway	Conveyance Facility in or adjacent to Roadway	Construction Crosses Roadway	Haul Routes	Roadway Modifications
Race Track Road			X	
Tyler Island Road		X	X	Permanent access road
N Staten Island Road			X	
SR 12		X	X	Temporary access road
Venice Island		X	X	Permanent access road
S Bacon Island Road		X	X	
Bacon Island Road			X	
SR 4		X	X	Permanent access roads on both sides of SR 4
Clifton Court Road			X	
Herdlyn Road	X		X	
Byron Hwy	X		X	Temporary access roads

Construction could result in circulation delays or the inability to maintain adequate vehicular access in or around construction work zones. The potential for this effect would be highest during construction of the conveyance facility because of the volume of vehicles needed to transport materials and workers to and from construction sites for pipeline/tunnel construction. The effect of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be significant. Mitigation Measures TRANS-1a and TRANS-1b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

DWR or its contractor will develop a site-specific traffic management plan (TMP) that addresses minimizing traffic impacts during construction. The TMP will be developed and implemented prior to beginning construction. Each plan will address the following, as needed.

- Signage and barricades to be used around the work sites.
- Use of flag people or temporary traffic signals/signage as necessary to slow or detour traffic.
- Notifications for the public, emergency providers, and schools describing construction activities that could affect transportation.
- Procedures for project area evacuation in the case of an emergency declared by county or other local authorities.
- Specification of construction staging areas and material delivery routes.
- Designation of areas where nighttime construction will occur.
- Plans to relocate school bus drop-off and pick-up locations if they will be affected during construction.

- Scheduling for oversized material deliveries to the work site and haul routes.
- Provisions that direct haulers to pull over in the event of an emergency. If an emergency vehicle is approaching on a narrow two-way roadway, appropriate maneuvers will be conducted by the construction vehicles to allow continual access for the emergency vehicles at the time of an emergency.
- Control for any temporary road closure, detour, or other disruption to traffic circulation.
- Offsite vehicle staging and parking areas.
- Posted information for contact in case of emergency or complaint.
- Canal and bridge construction will be coordinated with agencies with jurisdiction and staged to allow traffic to be maintained on the existing or temporarily realigned roadway until construction of facilities is completed.

Mitigation Measure TRANS-1b: Establish alternate access routes

DWR or its contractor will establish alternate access routes via detours and bridges in coordination with Caltrans or the applicable jurisdiction to maintain continual circulation for local travelers in and around construction zones on roadways that would be subject to temporary surface impacts. DWR or its contractor will ensure that canal and bridge construction will be coordinated and staged to allow traffic to be maintained on the existing or temporarily realigned roadway until construction of facilities is completed.

Impact TRANS-2: Damage to roadway surfaces from construction activities

Construction truck traffic may damage haul route or construction access roadway surfaces . During construction, various materials would be transported to and from the construction areas in load-bearing trucks. To the extent possible, haul routes would be limited to major roads and designated truck routes. (Haul routes are discussed above under Impact TRANS-1.)

Maintenance of state and county truck routes includes periodic inspection to assess structural integrity and need for repairs, followed by implementation of needed repairs. If construction trucks travel on roadways that are not covered by these maintenance programs, roadway damage such as potholes or minor fractures may occur without subsequent inspection and repair. The effect of roadway damage during construction would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of roadway damage during construction would be significant. Mitigation Measure TRANS-2 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-2: Repair damages to roadway surfaces

DWR or its contractor will ensure that all roads, including levee roads, affected by project construction will be restored to at least pre-construction conditions following the construction/restoration activity affecting the roadway.

Impact TRANS-3: Increase in safety hazards during construction

The maneuvering of construction-related vehicles and equipment among general-purpose traffic on public roads that provide access to the Plan Area could cause safety hazards. The effect of increased safety hazards would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of increased safety hazards would be significant. Mitigation Measure TRANS-1a, described above, would require implementation of site-specific TMPs and would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan.

Impact TRANS-4: Interference with emergency management routes during construction

Alternative 1A would require a heavy volume of materials to be hauled to the construction work zones. As shown in Tables 19-11 and 19-12, many of the roadways near construction zones would be used for hauling construction materials. There is potential for construction vehicles to adversely affect the ability of emergency vehicles to respond in a timely manner to an emergency. This reduced response time or limited access could result in adverse impacts on law enforcement entities, fire protection entities, first responders, and persons traveling to and from hospitals.

In addition, temporary detours during construction could result in increased travel time for travelers on roadways throughout the Delta Region, particularly on SR 160. As shown in Table 19-14, the temporary SR 160 detour would resultin an overall decreased travel distance and would not result in a substantial increase in response time for emergency providers.

Table 19-14. Distance of Detours - Alternatives 1A, 1B, 2A, 2B, 3, 4, 5, 6A, 6B, 7, and 8

[Note to reviewers: this information to be revised based on GIS analysis of ENGR Rev 9]

Construction Feature/ Detoured Roadway	Existing Road Length (miles)	Detoured Road Length (miles)	Difference in Distance (miles)
Intake 1 (SR 160)	1.88	1.26	-0.62
Intake 2 (SR 160)	0.71	1.06	0.35
Intake 3 (SR 160)	1.46	1.09	-0.37
Intake 4 (SR 160)	0.81	1.12	0.31
Intake 5 (SR 160)	TBD	TBD	TBD

Construction would result in circulation delays or the inability to maintain adequate vehicular access in or around construction work zones and longer, unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas. The effect of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be significant. Mitigation Measures TRANS-1a and TRANS-1b, described above, would reduce this impact to a less-than-significant level.

Impact TRANS-5: Disruption of marine traffic during construction

Under Alternative 1A, barges are planned to transport heavy or large construction material to construction sites. For the construction of the intakes and intake pumping plants, a probable site for a barge unloading facility is at the existing waterside dock facility at the community of Hood. Ocean-going vessels would carry materials up the Sacramento River, approximately 40 miles to the barge unloading facility in Hood. The materials would then be unloaded and trucked to the

intake/pumping plant construction sites. [*Note to reviewers: location based on response to RFI No. 162*]

Under Alternative 1A, other barge unloading facilities for construction materials are planned at the following locations:

- SR 160 west of Walnut Grove
- Venice Island
- Bacon Island
- Woodward Island
- Victoria Island
- Tyler Island

Approximately 3,000 barge trips are projected to carry construction materials to the sites listed above. *[Note to reviewers: information is based on response to RFI 190.]* This major increase in Sacramento River barge traffic could be substantial during the construction period. The increase in barge traffic could adversely affect use of the river by boaters. Becausebarges are relatively slow and have less maneuverability than smaller vessels, increased barge traffic could cause additional impediments to the passage of other vessels. Increased barge traffic could also cause an additional constraint to roadways that have moveable bridges. If barge traffic were to increase, there could be an increase in the frequency of temporary road closures needed to operate the moveable bridge, enabling the barge traffic to continue along the river. During the time that the roadway is obstructed, traffic delays would increase.

In-water intake construction would also present impediments to marine traffic in the immediate intake areas during the construction period. However, the Sacramento River would remain open to boat traffic at all times during construction, and the width of the river near the intakes (500–700 feet) would allow for passage of the types of boats typically observed on the Sacramento River. (Refer to Chapter 15, *Recreation*, for additional discussion of the effects of intake construction on boating.)

Barge unloading facilities could result in structural impediments to marine traffic, though it is unlikely there would be any substantive adverse effects. The majority of commercial barge activity in the Delta travels from the San Francisco Bay to the Sacramento area via the Sacramento River Deep Water Channel. Alternative 1A would avoid direct impacts on this barge traffic because the project features would be located along the Sacramento River (not the Deep Water Channel) and no modifications to the Deep Water Channel would be required. The barge unloading facility by Venice Island would not be expected to interfere with navigation to the Port of Stockton because it would be located outside the main channel and would be designed to facilitate barge operations. The barge unloading facilities would be temporary and removed following construction. Project construction could directly affect marine transportation in two manners: (1) project-related materials delivery could result in an increase in barge traffic, and (2) in-water construction activities related to the intake facilities could present obstacles to boats and other marine vehicles. The effect of disruption to marine traffic during construction would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of disruption to marine traffic during construction would be significant. Mitigation Measures TRANS-5a and TRANS-5b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-5a: Implement barge management plans

Where barges are used to transport materials, DWR or its contractor will ensure that a barge management plan is prepared addressing the dimensions, draft, timing and number of barges. DWR or its contractor will ensure that the commercial and leisure boating community is notified of proposed barge operations in the waterways and ensure that emergency providers are notified of any barge activities that could hamper emergency response. The barge management plan will also address construction activities in and adjacent to navigable waterways that may have an effect on other marine traffic.

Mitigation Measure TRANS-5b: Comply with permit requirements for navigable waterways

DWR or its contractors will ensure that the project complies with any and all permits required by the U.S. Coast Guard, U.S. Army Corps of Engineers (USACE), and other federal, state, or local agencies as needed to operate barges on and/or perform construction or maintenance activities within navigable waterways, and meets all permit conditions. A list of potentially applicable permits may be found in Section 5.0—*Summary of Permits, Approvals, and Authorizations*, BDCP/DHCCP Permitting Handbook, California Department of Water Resources, March 2010.

Impact TRANS-6: Disruption of rail traffic during construction

The proposed Alternative 1A conveyance crosses under the existing Burlington Northern Santa Fe (BNSF) railway/Amtrak San Joaquin line between Bacon Island and Woodward Island. Maintaining freight and passenger service on the BNSF railroad line is included in the project design, and the effect of this crossing would be minimal to non-existent because the proposed conveyance would traverse the railroad in a deep bore tunnel.

The Union Pacific Railroad (UPRR) Tracy Subdivision (branch line) runs parallel to Byron Highway, between the highway and the proposed new forebay adjacent to the existing Clifton Court Forebay. The construction impact of the new forebay is unlikely to disrupt rail service because much of this line has not been in service recently. The UPRR may return it to freight service in the future Table 19-15 identifies potentially affected railroads.

Table 19-15. Construction Impacts on Rail Traffic - Alternatives 1A, 2A, 3A, 4, 5, 6A, 7, and 8

Affected Railroad	Crosses and/or Immediately Adjacent to Construction Zone	Level of Train Volume	Construction Impacts on Rail Traffic
BNSF Railway and Amtrak San Joaquin Line	Yes	High	Minimal to Non-Existent (conveyance crosses railroad well below grade in deep bore tunnel)
Union Pacific Railroad--Tracy Subdivision	Yes	Low (Out of Service)	Minimal to Non-Existent

Construction is not likely to disrupt rail service. The effect of disruption to rail traffic during construction would not be adverse. However, mitigation is available to further reduce the impact. If the UPRR Tracy Subdivision branch line is reopened prior to construction, the continuity of rail traffic can be managed, if needed, through implementation of Mitigation Measure TRANS-6.

CEQA Conclusion: The impact of disruption to rail traffic during construction would be less than significant. Mitigation Measure TRANS-6 would further reduce this impact.

Mitigation Measure TRANS-6: Consult with the UPRR and develop and implement a rail construction management plan, if necessary

DWR or its contractor will consult with UPRR to assess the level and timing of train volumes (if any) and potential for disruption to determine if a Rail Construction Management Plan needs to be developed to avoid impacts on rail traffic. If so, a Plan would be developed in collaboration with the project owner (DWR) and UPRR. The plan must avoid or significantly limit any interruption of service and will include, at a minimum:

- Daily construction time windows during which construction activity is restricted or rail operations would need to be suspended
- Alternative interim transportation modes (e.g., trucks or buses) that could be used to provide freight and/or passenger service during anylonger term railroad closures
- Construction of shoo-fly (or temporary by-pass) tracks
- Communications protocols
- Other actions (to be identified and developed as may be needed)

Impact TRANS-7: Disruption of transit service during construction

Construction of conveyances and other project elements may impact various roadways upon which transit service operates. To the extent that construction detours are necessary and/or significant congestion occurs during lane closures and other construction activities, transit routes and schedules would be affected. Table 19-16 summarizes the transit service potentiallyaffected by Alternative 1A.

Table 19-16. Construction Impacts on Bus Routes - Alternatives 1A, 2A, 3, 4, 5, 6A, 7, and 8

Affected Transit Service	Roadway Operated on and Location	Estimated Trips per Day	Construction Impacts on Bus Routes
SCT/Link Delta Route	SR 12 across Bouldin Island	4 trips per weekday (2 in each direction)	Marginal, if any—deep bore tunnel construction below the roadway. A shaft location is identified adjacent to SR 12.

Tunnel construction could substantially affect operation of the SCT Link/Delta Route, and construction of the shaft adjacent to SR 12 would affect traffic on that facility. Intercity Greyhound bus lines primarily operate on the interstate highway system in this vicinity. To the extent that other roadways affected by Alternative 1A construction also carry Greyhound bus lines, those routes may be affected as well. The effect of disruption to transit service during construction would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of disruption to transit service during construction would be significant. Mitigation Measure TRANS-7 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-7: Develop and implement a transit construction management plan

DWR will consult with transit providers to assess whether a Transit Construction Management Plan needs to be developed in collaboration with the project owner (DWR), the affected transit agency, and relevant public works departments. The plan will include, at a minimum:

- Construction schedules and required detours;
- Daily construction time windows during which transit operations would be either detoured or significantly slowed;
- Opportunities for priority flagging for transit and/or other queue bypass strategies;
- Communications protocols;
- Other actions (to be identified and developed as needed]

DWR will also consult with Greyhound Bus Lines to determine whether construction would affect pertinent roadways and bus operations. If determined necessary, Greyhound service would also be addressed in the Transit Construction Management Plan.

Impact TRANS-8: Interference with bicycle routes during construction

Several bicycle routes traverse or are adjacent to Alternative 1A and its construction zones. Bicycle routes may be separated non-motorized paths (Class I); marked bike lanes on a street or highway (Class II); or designated signed routes without a marked lane operating in mixed flow with motorized traffic (Class III). Bicycles may also operate legally on any roadway, regardless of whether or not a bike route class designation exists.

The temporary impacts of interference with select bicycle routes during construction of Alternative 1A are summarized in Table 19-17 below. Because some bicycle traffic may be found on all primary and secondary roadways in the Transportation study area, please also refer to Roadway Impact section for construction that may also affect bicycle traffic.

Table 19-17. Construction Impacts on Bicycle Routes - Alternatives 1A, 2A, 3, 4, 5, 6A, 7, and 8

[Note to reviewers: This table will be revised based on GIS analysis of ENGR Rev 9]

Bicycle Route	Construction Crosses or Adjacent to Bicycle Route	Bicycle Route Along Truck Haul Routes
South River Road Route	Intake construction would impact bike route	No
SR 160 (River Road)	Intake construction would impact bike route	Yes
SR 12	Bike Route/highway above deep bore conveyance tunnel—no impact (may be some impact with construction of adjacent shaft)	Potential
SR 4	Bike Route/highway above deep bore conveyance tunnel—no impact	No

Construction could temporarily disrupt bicycle routes on SR 160/River Road and potentially on SR 12. The effect of disruption to bicycle routes during construction would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of disruption to bicycle routes during construction would be significant. Mitigation Measure TRANS-8 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-8: Implement a bicycle traffic management plan as a component of motorized vehicular traffic management plan

To minimize bicycle traffic impacts and maintain bicycle safety, a construction Bicycle Traffic Management Plan will be developed as a component of the motorized vehicular Traffic Management Plan. The emphasis of the bicycle plan will be both on maintaining bicycle mobility and bicycle safety. The latter will particularly need focus where roadway surfaces which are open to vehicular traffic would be hazardous to road cycling activity (e.g., loose gravel, steel plates, etc.). The Bicycle Traffic Management Plan will be developed and implemented for all project construction activities impacting a bicycle thoroughfare (whether or not classified as a bike route) prior to beginning construction and will address the following at a minimum:

- Signage and barricades to be used around the work sites;
- Use of flag people or temporary traffic signals/signage as necessary to slow or detour traffic;
- Notifications for the public, emergency providers, cycling organizations, bike shops, and schools describing construction activities that could affect bicycle transportation;
- Procedures for project area evacuation in the case of an emergency declared by county or other local authorities;
- Posted information for contact in case of emergency or complaint;
- Other actions (to be identified and developed as may be needed).

Impact TRANS-9: Increased traffic volumes and delays during operations

Maintaining and operating the facilities could affect roadway operations in the vicinity by increasing vehicle trips. However, operations and maintenance activities would only require minimal labor. For the purposes of this analysis, it was estimated that weekly operations and maintenance

activities would require approximately 50 workers (including maintenance crew, management, repair crew, pumping plant crew, and dewatering crew). Major inspections would mobilize about 11 people. These activities would occur along the entire alternative alignment. Given the limited number of workers involved and the large number of work sites, it is not anticipated that routine operations and maintenance activities or major inspections would result in any significant increase of traffic volumes or roadway congestion. The intake design includes parking for employees during operations and maintenance. The small amount of added vehicle trips for facility maintenance and operations would not substantially contribute to traffic volumes and increase roadway congestion. The effect of increased traffic volumes and delays during project operations would not be adverse.

CEQA Conclusion: The impact of increased traffic volumes and delays during project operations would be less than significant. No mitigation is required.

Impact TRANS-10: Permanent alteration of transportation patterns during operations

Due to the buried tunnel configuration, Alternative 1A does not intersect public roadways, state routes, railroads, and bridges except for the intake areas where the SR 160 and Randall Island Road will be permanently rerouted.

Each intake/pumping plant site will require realignment of the levee road (SR 160) adjacent to intakes CER 1–5 and Alt 6–7. The levee road adjacent to intake Alt 5 is Randall Island Road. SR 160 crosses the Sacramento River north of intakes Alt 6 and 7, which are located along River Road. A project study report (PSR) prepared by the California Department of Transportation (Caltrans) describes the assumptions and requirements for the permanent realignment of SR 160 as follows.

- Offsetting the realigned levee road 200 feet from the existing levee road.
- Use of a two-lane, two-way road, with a total cross-sectional width of 24 feet.
- Use of a maximum speed limit of 60 miles per hour.
- Provide horizontal and vertical alignments per Caltrans Highway Design Manual.
- The realigned levee road will be level, straight, and parallel to the intake for the length adjacent to the intake.
- The realigned levee road will be set at the same elevation as the top of the intake and the pumping plant building pad for the length adjacent to the intake.
- A single cross intersection will be centered on the intake length to provide access to the intake and pumping plant.

Except for the intakes, Alternative 1A does not have surface intersections with public roadways, state routes, or railroads, and would not require bridges. Impacts on public roadways would be limited to the intake areas and would not substantially alter traffic patterns. The design and construction of all project components (i.e., conveyances, intakes, forebays) will provide for on-going continuity of all rail operations following completion of construction. Structures will be constructed as necessary to provide connectivity across canals (either bridges or siphons) for active railroads to cross without disruption. Water operations would not modify the river stage above the water levels seen in the river today. Therefore, no change would be expected to affect boat traffic associated with changes in water levels. Operations and maintenance of the facilities would not have any substantive impact on barge traffic (or the roadway network) due to operation of moveable bridges. Impediments to boat traffic associated with the intakes would continue for the life of the

project, but would not substantially impact boat passage or usage (refer to Chapter 15, *Recreation*, for more discussion of effects on boating.) The effect of permanent alteration of transportation patterns during operations would not be adverse.

CEQA Conclusion: The impact of permanent alteration of transportation patterns during operations would be less than significant. No mitigation is required.

Impact TRANS-11: Increased risk of wildlife-aircraft strikes during implementation of CM2–CM24 to create or improve wildlife habitat

Implementation of the conservation measures that would create or improve wildlife habitat could attract waterfowl and other birds to areas in proximity to airports, increasing the opportunity for bird-aircraft strikes. Because the specific areas for restoration have not been determined, this impact is evaluated qualitatively at the broad, programmatic level. This impact will be evaluated in future environmental review once information on the design, location, and implementation of CMs 2–24 is sufficient to permit a project-level analysis.

The Federal Aviation Administration (FAA) discourages the improvement of wildlife habitat in proximity to public-use airports to lessen the risk of wildlife-aircraft strikes. If restoration actions are located within 5,000 feet of airports used by propeller-driven aircraft or within 10,000 feet of those used by jet-driven aircraft (known as the Critical Zone), the risk of wildlife-aircraft strikes would likely increase. The FAA recommends that these distances be maintained between the Air Operations Area (AOA) and land uses deemed incompatible with safe airport operations (i.e., hazardous wildlife attractants), including agriculture, water management facilities, and active wetlands.

Restoration could increase the risk of aircraft strikes at any of the other public-use airports in the area (refer to Environmental Setting above). If restoration actions were to occur within the 10,000-foot Critical Zone (all of these airports support at least some jet-driven aircraft) and/or the 5-mile General Zone of these airports, this could result in an adverse effect. These airports are located in mixed land uses. Some are located in proximity to urban uses, but all are located within five miles of substantial existing agricultural lands and wetlands. Thus, all of the airports are currently located in areas with substantial existing wildlife hazards. The effect of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be significant. Mitigation Measure TRANS-11 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-11: Consult with individual airports and USFWS, and other relevant organizations

DWR or its Contractor will consult with the individual airports and USFWS during the project-level environmental assessments for individual restoration activities, when site-specific locations and design plans are finalized. At that time, appropriate management plans, strategies, and protocols would be developed. Site-specific avoidance, minimization, and mitigation measures will be developed during future environmental review once information on the design, location, and implementation of CMs 2–24 is sufficient to permit a project-level analysis.

Impact TRANS-12: Increased traffic volumes during construction of CM2–CM24

Implementation of conservation measures could generate additional traffic related to restoration or monitoring activities. Because the specific areas for implementing the conservation measures have not been determined, this impact is evaluated qualitatively.

Habitat restoration and enhancement conservation measures are anticipated to include a number of activities generating traffic to transport material and workers to/from the construction sites, including:

- grading, excavation, and placement of fill material
- breaching, modification, or removal of existing levees and construction of new levees
- modification, demolition, and removal of existing infrastructure (e.g., buildings, roads, fences, electric transmission and gas lines, irrigation infrastructure)
- construction of new infrastructure (e.g., buildings, roads, fences, electric transmission and gas lines, irrigation infrastructure

During construction, temporary impacts on roadways could result in circulation delays or the inability to maintain adequate vehicular access in or around construction work zones. Roads and highways in and around Suisun Marsh and the Yolo Bypass could experience increases in traffic volumes, resulting in localized congestion and conflicts with local traffic. These roadways could function as haul routes or to bring construction personnel to the work sites. Maintenance and monitoring of the restoration areas would also generate some vehicle trips. Roadways in the Delta subregion that are anticipated to be affected include the following:

- Interstate 680
- State Route 12
- Chadbourne Road
- Ramsey Road
- Jacksnipe Road
- Collinsville Road
- Grizzly Island Road
- Gum Tree Road
- Van Sickle Road
- Joyce Island Road
- Branscombe Road
- Potrero Hills Lane
- Scally Road
- Shiloh Road
- Little Honker Bay Road

The effect would vary according to the amount of traffic generated by the construction of the specific conservation measure, the location and timing of the actions called for in the conservation measure, and the traffic conditions at the time of implementation. The effect of increased traffic volumes during construction of CM2–CM24 would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of increased traffic volumes during construction of CM2–CM24 would be significant. Mitigation Measure TRANS-1a would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

19.3.3.3 Alternative 1B

Impact TRANS-1: Increased traffic volumes and delays, and alteration of traffic patterns during construction

During construction, temporary impacts on roadways under Alternative 1B would be similar to those described for Alternative 1A. As with Alternative 1A, a total of five intakes would be constructed (assumed to be intakes CER 1–5). Under Alternative 1B, no intermediate forebay would be constructed. The conveyance facility would be a canal on the east side of the Sacramento River (Figures 3-4 and 3-5). The following Table 19-18 shows potential LOS effects on locations in the study area from construction of the alternatives featuring the East Canal conveyance.

[Note to Reviewers: this information will be updated following the LOS analysis]

Table 19-18. Potential LOS Effects from Alternatives 1B, 2B, and 6B

Location	LOS	
	Alt 1B	Alt 2B
SR 160 n/o Freeport Bridge Road	C	C
SR 160 n/o Hood/Franklin Road	B	B
SR 160 s/o Hood/Franklin Road	D	B
SR 160 n/o Paintersville Bridge	B	B
SR 160 n/o Walnut Grove Bridge	B	B
SR 160 in Isleton	B	B
SR 160 at CC/S County Line	B	B
Hood Franklin Road	F	D
Twin Cities Road	B	C
Walnut Grove-Thornton Road	C	C
SR 84 at S/Y County Line	A	A
SR 84 at Courtland Road	A	A
SR 84 at Courtland Road	A	A
SR 84 at Babel Slough Road	A	A
SR 84 at End of Route 84	A	A

Estimates of Construction Generated Traffic

As with Alternative 1A, there would be a substantial number of workers traveling to and from construction sites. An estimate of the number of vehicles generated by construction activities for Alternative 1B is shown below in Table 19-19. Daily and peak-hour trips are estimated as passenger car equivalents, as described in the Analysis Methodology (Section 19.3). The numbers of workers and truck traffic estimated for Alternative 1B are substantially higher than Alternative 1A, primarily due to the level of effort estimated for culvert installation.

Table 19-19: Estimated Number of Construction Workers and Truck Traffic for Alternative 1B

	Number of Workers[a]	Workers Peak Hr Veh[b]	Total Truck Hours of Operations[c]	Total Truck Trips[d]	Truck Trips/ Day[d]	Truck Trips/Peak Hr[e]	Total Peak Hour Vehicles[f]
5 Intakes	1,020	510	107,644	23,595	259	39	646
Pumping plants	2,762	1,381	803,109	176,037	1,932	290	2,395
Conveyance	364	182	66,090	14,487	159	24	265
Canals	485	243	54,189	11,878	130	20	311
Culverts	4,661	2,331	3,766,608	825,621	9,063	1359	7,088
Tunnels	123	62	1,698	372	4	1	64
Bridges	216	108	124,118	27,206	299	45	265
Forebays	85	43	5,337	1,170	13	2	49
Total	9,716						

[Notes to reviewers: table based on following data sources or assumptions]

[a] Number of workers from RFI 186 – East

[b] Assuming each worker drives his or her own vehicle during the peak hour; assuming 50% of workers present on-site at peak construction period

[c] From RFI-187-194 (highway vehicles only)

[d] From RFI-164 (intakes only); other project activities derived from intakes, assuming same rate of trips/hr of operations

[e] Assuming that 15% of the daily truck trips occur during the peak hour

[f] Truck trips are multiplied by 3.5 to obtain passenger car equivalent

Construction Access Roads

Temporary asphalt paved access road along both sides of the right of way and along the entire length of canal during construction is anticipated. A permanent primary access road having a 16-footwide paved section with 4-foot-wide shoulders is proposed on the east embankment. The proposed design pavement section of 3 inches of asphaltic concrete over 6 inches of Caltrans Class 2 aggregate base.

A permanent secondary access road having a 12-foot-wide gravel section with 4-foot-wide shoulders is proposed on the west embankment. The design section for the secondary access road will be 8 inches of Class 2 aggregate base.

As with Alternative 1A, existing public and/or private roads would be used for year-round access, and the final routing of construction-related traffic will be determined by the construction contractors. Likely haul routes are presented in Table 19-20.

Effects on Capacity

As with Alternative 1A, it is expected that the majority of both employee and material hauling trips would utilize I-5 for regional access. Construction-related traffic would use the local roads to access the construction sites (see Table 19-20). Daily trips would be expected to be distributed around different work areas along the conveyance alignment. However, the increase in traffic volumes on local transportation networks would be substantial, relative to Alternative 1A because of the higher number of workers and vehicle trips anticipated. This increase would generate delays and adverse effects on the turning movements at intersections and interchanges.

Table 19-20 Potential Haul Routes for Alternatives 1B, 2B, and 6B

[Note to Reviewers: Haul route information is preliminary and will be updated if more information becomes available.]

Facility or Work Area*	Haul Routes	Designated Truck Routes	Notes
5 intakes	(1) SR 160; Hood Franklin Road; I-5	SR 160 only (California Legal Network Route)	Shorter to I-5, but Hood Franklin Road is not a designated truck route
	(2) SR 160 to Pocket Road; I-5	SR 160 between Paintersville Bridge and where it passes under I-5 in Sacramento is a California Legal Network Route	Longer to I-5, but mostly on designated truck route
Lambert Road bridge; Snodgrass Slough Siphon	Lambert Road; Franklin Blvd; Twin Cities Road; I-5 South side: unnamed access to Lambert Road		
Dierssen Road bridge	Dierssen Road; Franklin Blvd; Twin Cities Road; I-5		
Twin Cities Road Bridge and tunnel north side	Twin Cities Road; I-5		
W Barber Road bridge and tunnel south side	W Barber Road; N Thornton Road; W Walnut Grove Road; I-5		
Walnut Grove Road bridge	W Walnut Grove Road; I-5	Walnut Grove Road; I-5 is a designated truck route (STAA) by San Joaquin County	
Beaver Slough Siphon	N Blossom Road; W Walnut Grove Road	Walnut Grove Road; I-5 is a designated truck route (STAA) by San Joaquin County	
Peltier Road bridge	Peltier Road; I-5		

Facility or Work Area*	Haul Routes	Designated Truck Routes	Notes
Hog Slough siphon	North side: unnamed road to Peltier; Peltier; I-5		
	South side: unnamed road to Woodbridge		
Woodbridge Road bridge	Woodbridge; N Thornton Road; W Turner Road; I-5		
Sycamore Slough Siphon	North side: through Woodbridge; N Thornton Road; W Turner Road		
	South side: through Cotta Road; N Jacob Brack Road; W Turner Road; I-5		
SR 12 bridge	SR 12	SR 12 is a Terminal Access (STAA) Route	
Guard Road bridge	Guard Road; SR 12	SR 12 is a Terminal Access (STAA) Route	
White Slough siphon	North side: unnamed road to Guard Road; SR 12		
	South side: King Island to W 8 Mile Road (bridge); to I-5		New bridge shown in graphic n/o 8 Mile Road does not appear to be required for conveyance -- likely to be for restoration activities
W 8 Mile Road bridge	8 Mile Road; I-5		
Disappointment Slough siphon	North side: Bacon Island Road; King Island; 8 Mile Road; I-5		
	South side: Rindge Tract Island; bridge; Atherton Road; N Rio Blanco Road; 8 Mile Road		
Fourteenmile Slough Tunnel	North side: W Rindge Road; bridge; Atherton Road; N Rio Blanco Road; 8 Mile Road		
	South side: N Holt Road; S Holt Road; SR 4; I-5		Assuming that Hold Road connectivity will be maintained during construction

Facility or Work Area*	Haul Routes	Designated Truck Routes	Notes
W McDonald Road bridge	S Holt Road; SR 4; I-5	SR 4 (California Legal Network between Tracy Blvd and Dagget Road, then Terminal Access STAA to I-5)	
Pumping Plant & Siphon n/o SR 4	S Holt Road; SR 4; I-5	SR 4 (California Legal Network between Tracy Blvd and Dagget Road, then Terminal Access STAA to I-5)	
SR 4 bridge	SR 4; I-5	SR 4 (California Legal Network between Tracy Blvd and Dagget Road, then Terminal Access STAA to I-5)	
Trappers Road bridge	Trappers Road; SR 4; I-5	SR 4 (California Legal Network between Tracy Blvd and Dagget Road, then Terminal Access STAA to I-5)	
Tracy Blvd bridge	Tracy Blvd; SR 4; I-5	SR 4 (California Legal Network between Tracy Blvd and Dagget Road, then Terminal Access STAA to I-5)	
Middle River siphon	North side: unnamed road to Tracy Blvd; SR 4	SR 4 (California Legal Network between Tracy Blvd and Dagget Road, then Terminal Access STAA to I-5)	
	South side: W Klein Road to Tracy Blvd (bridge); SR 4	SR 4 (California Legal Network between Tracy Blvd and Dagget Road, then Terminal Access STAA to I-5)	
Calpack Road bridge	Calpack Road; W Klein Road to Tracy Blvd (bridge); SR 4	SR 4 (California Legal Network between Tracy Blvd and Dagget Road, then Terminal Access STAA to I-5)	
Clifton Court Road bridge	Clifton Court Road; Tracy Blvd; I-205	I-205 (National Network)	
Old River tunnel - east side	Unnamed roads to Clifton Court Road; Tracy Blvd; I-205	I-205 (National Network)	
Clifton Court Forebay	Byron Highway (County Hwy J4); W Grant Line Road; I-205	I-205 (National Network)	

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Effects on Access and Mobility

Temporary access roads for construction traffic and traffic detours during construction will have similar effects on access and mobility to Alternative 1A, but the magnitude of the impact would be greater because of the higher number of workers and vehicle trips anticipated for construction of Alternative 1B. In addition, Alternative 1B could have increased potential for conflicts with traffic on public roadways because of the bridges required at multiple locations to maintain roadway connectivity (see discussion under Impact TRANS-6). In addition, several roads located atop levees would be affected when inverted siphons are constructed under these waterways within the levees. The operation of these roads would be interrupted during the anticipated cut-and-cover construction, which would occur during successive dry seasons. These roads are generally access roads around the various tracts and generally do not create an interruption to public traffic. Table 19-21 lists the levee roads potentially affected by culvert siphon construction.

Table 19-21. Levee Roads Potentially Affected by Culvert Siphon Construction (Alternative 1B)

Culvert Siphon Location	Levee Road
Beaver Slough	Dirt roads (unnamed)
Sycamore Slough	West Victor Road on southern levee
White Slough	King Island Road on south levee
Disappointment Slough	Bacon Island Road on north side West Rindge Road on south side

Tunnels are also proposed under several waterways; however, traffic is not expected to be interrupted during tunnel construction.

Temporary impacts on roadways are summarized in Table 19-22.

Table 19-22. Temporary Impacts on Public Roadways for Alternatives 1B, 2B, and 6B

[Note to reviewers: Haul routes will be updated as more information becomes available.]

Roadway	Conveyance Facility within or adjacent to Roadway	Construction Crosses Roadway	Haul Routes	Roadway Modifications
SR 160	X	X	X	Temporary realignment during construction; Permanent realignment during operations
Randall Island Road	X	X	X	Temporary realignment during construction; Permanent realignment during operations
Scribner Road		X	X	New bridge proposed
Hood Franklin Road		X	X	New bridge proposed
Lambert Road		X	X	New bridge proposed
Dierssen Road		X	X	New bridge proposed
Twin Cities Road		X	X	New bridge proposed
N Vail Road	X		X	

Roadway	Conveyance Facility within or adjacent to Roadway	Construction Crosses Roadway	Haul Routes	Roadway Modifications
W Barber Road		X	X	New bridge proposed
Blossom Road	X	X	X	Blossom Road realignment needed -- not in proposed project (2 options discussed)
W Walnut Grove Road		X	X	New bridge proposed
W Peltier Road		X	X	New bridge proposed
W Woodbridge Road		X	X	New bridge proposed
Guard Road			X	
Cotta Road			X	
SR 12		X	X	New bridge proposed
Guard Road		X	X	New bridge proposed
King Island		X	X	
W 8 Mile Road		X	X	New bridge proposed
Bacon Island Road		X	X	
Rindge Tract Island		X	X	
W Rindge Road		X	X	
W Neugerbauer		X	X	
N Holt Road	X		X	Basic routing of Holt Road is to be maintained, but is in the canal ROW
W McDonald Road		X	X	New bridge proposed
S Holt Road	X		X	Permanent detour of Holt Road required
W Jacobs Road		X	X	Permanent realignment of Jacobs Road included in the project
SR 4		X	X	New bridge proposed
W Kingston School Road		X	X	New bridge proposed
S Tracy Blvd		X	X	New bridge proposed
Klein Road		X	X	
Calpack Road		X	X	New bridge proposed
S Bonetti Road		X		No bridge proposed. A bridge is to be built for the intersecting Clifton Court Road. South Bonetti Road is to be realigned along embankment toe road to be able to utilize this crossing.

Roadway	Conveyance Facility within or adjacent to Roadway	Construction Crosses Roadway	Haul Routes	Roadway Modifications
Clifton Court Road		X	X	New bridge proposed
Herdlyn Road	X	X	X	
Byron Hwy	X		X	

Construction could result in circulation delays or the inability to maintain adequate vehicular access in or around construction work zones. The potential for the effect would be highest during construction of the conveyance facility, due to the volume of vehicles needed to transport materials and workers to and from construction sites for the pipeline/tunnel construction. The effect of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be significant. Mitigation Measures TRANS-1a and TRANS-1b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Mitigation Measure TRANS-1b: Establish alternate access routes

Impact TRANS-2: Damage to roadway surfaces from construction activities

As shown in Tables 19-10 and 19-18, total amounts of construction truck trips would be substantially higher with Alternative 1B, compared to Alternative 1A, due to culvert installations. Therefore, the effect under Alternative 1B would be similar to the effect under Alternative 1A, but greater in magnitude because of the substantially higher amount of truck traffic, increasing the potential for damage to the roadway surface. The effect of roadway damage during construction would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of roadway damage during construction would be significant. Mitigation Measure TRANS-2 would reduce this impact to less-than-significant level.

Mitigation Measure TRANS-2. Repair damages to roadway surfaces

Impact TRANS-3: Increase in safety hazards during construction

As shown in Tables 19-10 and 19-18, total amounts of construction trips would be substantially higher with Alternative 1B, due to culvert installations. Therefore, the effects under Alternative 1B would be the similar to the effect under Alternative 1A, but greater in magnitude because of the substantially higher amount of total construction-related trips would increase the potential for safety hazards from maneuvering of vehicles and equipment among general-purpose traffic on public roads. The effect of increased safety hazards would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of increased safety hazards would be significant. Mitigation Measure TRANS-1a, described above, would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan.

Impact TRANS-4: Interference with emergency management routes during construction

The effect of the temporary detours of SR 160 under Alternative 1B would be the same as Alternative 1A, as shown in Table 19-13. However, as shown in Tables 19-10 and 19-18, total amounts of construction vehicles on the roadway system would be substantiallyhigher with Alternative 1B, due to culvert installations. Therefore, the effects under Alternative 1B would be similar to the effect under Alternative 1A, but greater in magnitude because of the increased potential for delays to emergency service providers using public roads in the Delta subregion. The effect of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be significant. Mitigation Measures TRANS-1a and TRANS-1b, described above, would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Mitigation Measure TRANS-1b: Establish alternate access routes

Impact TRANS-5: Disruption of marine traffic during construction

Under Alternative 1B a temporary barge unloading facility for construction material is planned on the San Joaquin River at Hog Island. Approximately 4,500 barge trips are projected to carry construction materials to this unloading facility. *[Note to Reviewers: information based on response to RFI 190.]* This major increase in San Joaquin River barge traffic could be substantial during the construction period. The increase in barge traffic could adversely affect use of the river by boaters. Because barges are relatively slow and have less maneuverability than smaller vessels, increased barge traffic could cause additional impediments to the passage of other vessels.

Increased barge traffic could also cause an additional constraint to roadways that have moveable bridges. If barge traffic were to increase, there could be an increase in the frequency of temporary road closures needed to operate the moveable bridge, enabling the barge traffic to continue along the river. During the time that the roadway is obstructed, traffic delays would increase. The effect of disruption to marine traffic during construction would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of disruption to marine traffic during construction would be significant. Mitigation Measures TRANS-5a and TRANS-5b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-5a. Implement barge management plans

Mitigation Measure TRANS-5b: Comply with permit requirements for navigable waterways

Impact TRANS-6: Disruption of rail traffic during construction

The potential for Alternative 1B to disrupt rail service on the UPRR Tracy Subdivision branch line would be the same as Alternative 1A with regard to construction of the new forebay. (See Table 19-23 for construction impacts on rail lines). Both conveyance alignments will cross the existing BNSF railway/Amtrak line just East of Holt. Maintaining freight and passenger service on the BNSF railroad line with canal construction will be achieved by way of a siphon to be constructed under the railroad. Construction of the siphon may temporarily affect BNSF/Amtrak railroad operations.

Table 19-23. Construction Impacts on Rail Traffic - Alternatives 1B, 2B, and 6B

Affected Railroad	Crosses and/or Immediately Adjacent to Construction Zone	Level of Train Volume	Construction Impacts on Rail Traffic
BNSF Railway and Amtrak San Joaquin Line	Yes	High	Substantial—railroad crosses construction of new canal and siphon just east of Holt
Union Pacific Railroad--Tracy Subdivision	Yes	Low (Out of Service)	Minimal to Non-Existent

If the currently out of service UPRR Tracy Subdivision branch line is reopened prior to construction, the continuity of rail traffic can be managed, if needed, through implementation of Mitigation Measure TRANS-6. Construction could interfere with operation of the BNSF rail line. The effect would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of disruption to rail traffic would be significant. Mitigation Measure TRANS-6 would reduce this impact.

Mitigation Measure TRANS-6. Consult with the BNSF Railway, Amtrak, and Union Pacific Railroad and develop/implement a rail construction management plans, if necessary

Impact TRANS-7: Disruption of transit service during construction

Construction of the canal conveyances and other project elements under Alternative 1B could require construction detours or contribute to congestion during lane closures and other construction activities, thereby affecting transit routes and schedules. Table 19-24 summarizes the transit service potentially affected under Alternative 1B.

Table 19-24. Construction Impacts on Bus Routes - Alternatives 1B, 2B, and 6B

Affected Transit Service	Roadway Operated On and Location	Estimated Trips per Day	Construction Impacts on Bus Route
SCT/Link Delta Route	SR 12 just west of I-5	4 trips per weekday (2 in each direction)	Construction of the new canal as it intersects with SR 12work area.

Intercity Greyhound bus lines primarily operate on the interstate highway system in this vicinity and are not anticipated to be delayed; however, the SCT Link/Delta route could experience substantial delays during construction. The effect of disruption to transit service during construction would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of disruption to transit service during construction would be significant. Mitigation Measure TRANS-7 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-7. Develop and implement transit construction management plans

Impact TRANS-8: Interference with bicycle routes during construction

Several bicycle routes traverse or are adjacent to Alternative 1B and its construction zones. The temporary impacts of interference with select bicycle routes during construction of Alternative 1B are summarized in Table 19-25 below. Because some bicycle traffic may be found on all primary and secondary roadways in the Transportation study area, please also refer tothe Impact TRANS-1 discussion for construction that may also affect bicycle traffic.

Table 19-25. Construction Impacts on Bicycle Routes - Alternatives 1B, 2B, and 6B

Bicycle Route	Construction Crosses or Adjacent to Bicycle Route	Bicycle Route Along Truck Haul Routes
SR 12	Crosses/adjacent to work area where SR 12 crosses canal/new bridge	Yes
SR 4	Work zone where SR 4 crosses canal/new bridge	No

Construction could interfere with bicycle routes along SR 12. The effect of disruption to bicycle routes during construction would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of disruption to bicycle routes during construction would be significant. Mitigation Measure TRANS-8 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-8. Implement bicycle traffic management plan as a component of motorized vehicular traffic management plan

Impact TRANS-9: Increased traffic volumes and delays during operations

The effect of maintaining and operating the facilities roadway operations under Alternative 1B would be similar to Alternative 1A. The effect of increased traffic volumes and delays during project operations would not be adverse.

CEQA Conclusion: The impact of increased traffic volumes and delays during project operations would be less than significant. No mitigation is required.

Impact TRANS-10: Permanent alteration of traffic patterns during operations

Similar to Alternative 1A, Alternative 1B would require realignment of SR 160 and Randall Island Road at the intakes. Because of canal construction, multiple bridges would be constructed across the alignment to maintain connectivity. Alternative 1B would intersect several public roadways, state

routes, and one railroad requiring bridges at most of these locations to maintain connectivity along the canal (see Table 19-22).

Public roads potentially affected under Alternative 1B include the following:

- Blossom Road: The canal would intersect Blossom Road between Barber Road and Walnut Grove Road. No bridge is proposed at this location. Instead, two options for re-routing Blossom Road on the east side of the canal have been discussed *[Note to Reviewers: This information was derived from 20100701_severed_public_roads.xls. Were these re-routing options intended to be presented as mitigation measures?]*
- Holt Road: Holt Road between Neugebauer Road and W McDonald Road is within the canal right-of-way in a couple of places. *[Note to Reviewers: Will design allow for current alignment to be maintained?]*
- Bonetti Road: The canal would intersect Bonetti Road near the intersection with Clifton Court Road. No bridge is proposed for Bonetti Road. Instead, Bonetti Road would be realigned along the canal to utilize the new Clifton Court Road bridge. *[Note to Reviewers: Is this realignment intended to be presented as a mitigation measure?]*

The effect of permanent alteration of transportation patterns during operations [would be/would not be] adverse. *[Note to Reviewers: Need to discuss disposition of questions above for affected public roads – will these be rerouted as part of project? If not, mitigation may be required]*

CEQA Conclusion: The impact of permanent alteration of transportation patterns during operations [would be/would not be] significant.

Impact TRANS-11: Increased risk of wildlife-aircraft strikes during implementation of CM2–CM24 to create or improve wildlife habitat

At the program-level of analysis, the impact under Alternative 1B would be the same as Alternative 1A because the acreage of conservation is identical. The effect of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be significant. Mitigation Measure TRANS-11 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-11: Consult with individual airports and USFWS, and other relevant organizations

Impact TRANS-12: Increased traffic volumes during construction of CM2–CM24

At the program-level of analysis, the impact under Alternative 1B would be the same as Alternative 1A because the acreage of conservation is identical. The effect of increased traffic volumes during construction of CM2–CM24 would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of increased traffic volumes during construction of CM2–CM24 would be significant. Mitigation Measure TRANS-1a would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

19.3.3.4 Alternative 1C

Impact TRANS-1: Increased traffic volumes and delays, and alteration of traffic patterns during construction

A total of 5 intakes would be constructed under Alternative 1C. They would be sited on the west bank of the Sacramento River, directly opposite the locations identified for the tunnel and east canal alignments. This alternative would also construct an intermediate forebay, and the conveyance facility would be a buried pipeline (see Figures 3-6 and 3-7 in Chapter 3, *Alternatives*). Table 19-27 shows potential LOS effects on locations in the study area from construction of the alternatives featuring the West Canal conveyance.

[Note to Reviewers: this information will be updated following the LOS analysis]

Table 19-27. Potential LOS Effects from Alternatives 1C, 2C, and 6C

	LOS	
Location	Alt 1C	Alt 2C
SR 160 n/o Freeport Bridge Road	F	F
SR 160 n/o Hood/Franklin Road	A	A
SR 160 s/o Hood/Franklin Road	B	B
SR 160 n/o Paintersville Bridge	B	B
SR 160 n/o Walnut Grove Bridge	B	C
SR 160 in Isleton	B	B
SR 160 at CC/S County Line	B	B
Hood Franklin Road	B	B
Twin Cities Road	B	B
Walnut Grove-Thornton Road	B	D
SR 84 at S/Y County Line	A	A
SR 84 at Courtland Road	B	B
SR 84 at Courtland Road	F	C
SR 84 at Babel Slough Road	F	C
SR 84 at End of Route 84	F	C

As with Alternatives 1A and 1B, there would be a substantial number of workers traveling to and from construction sites. An estimate of the number of vehicles generated by construction activities for Alternative 1C is shown below in Table 19-28. Daily and peak-hour trips are estimated as passenger car equivalents, as described in the Analysis Methodology (Section 19.3). Daily and peak-hour trips are estimated as passenger car equivalents, as described in the Analysis Methodology (Section 19.3). The numbers of workers and truck traffic estimated for Alternative 1C are substantially higher than Alternative 1A and 1B.

Table 19-28: Estimated Construction Worker Vehicles and Truck Traffic for Alternative 1C

	Number of Workers[a]	Workers Peak Hr Veh[b]	Total Truck Hours of Operations[c]	Total Truck Trips[d]	Truck Trips/ Day[d]	Truck Trips/Peak Hr[e]	Total Peak Hour Vehicles[f]
5 Intakes	1,020	1,020	107,680	23,595	259	39	1,156
Pumping Plants	2,650	2,650	803,109	175,978	1,932	290	3,664
Conveyance	2,416	2,416	109,928	24,088	264	40	2,555
Canals	265	265	278,272	60,975	669	100	616
Culverts	4,195	4,195	3,038,144	665,723	7,308	1096	8,031
Tunnels	323	323	11,904	2,608	29	4	338
Bridges	169	169	75,376	16,517	181	27	264
Forebays	91	91	5,696	1,248	14	2	98
Total	11,129						

[Notes to reviewers: table based on following data sources or assumptions]

[a] Number of workers from RFI 186 – West

[b] Assuming each worker drives his or her own vehicle during the peak hour; assuming 50% of workers present on-site at peak construction period

[c] From RFI-187-194 (highway vehicles only)

[d] From RFI-164 (intakes only); other project activities derived from intakes, assuming same rate of trips/hr of operations

[e] Assuming that 15% of the daily truck trips occur during the peak hour

[f] Truck trips are multiplied by 3.5 to obtain passenger car equivalent

Construction Access Roads

As with Alternative 1B, existing public and/or private roads would be used for year-round access for canal construction. The likely haul routes for Alternative 1C are presented in Table 19-29. The table is organized around the main construction sites.

Table 19-29: Potential Haul Routes for Alternatives 1C, 2C, and 6C

[Note to Reviewers: Haul route information is preliminary and will be updated if more information becomes available.]

Facility or Work Area*	Haul Routes	Designated Truck Routes	Notes
Intakes 1-2-3; Bridge at Intake#3	S River Road (E9); Freeport Bridge; SR 160 to Pocket Road; I-5	SR 160 between Paintersville Bridge and where it passes under I-5 in Sacramento is a California Legal Network Route	
Intakes 4-5	SR 84; I-80	SR 84 is a CA Legal Advisory Route until PM 15.7	
SR 84 bridge	SR 84; I-80	SR 84 is a CA Legal Advisory Route until PM 15.7	
N Courtland Road siphon	N Courtland Road; SR 84; I-80	SR 84 is a CA Legal Advisory Route until PM 15.7	

Facility or Work Area*	Haul Routes	Designated Truck Routes	Notes
Courtland Road bridge	Courtland Road; SR 84; I-80	SR 84 is a CA Legal Advisory Route until PM 15.7	
Daisie bridge	Daisie; SR 84; SR 84; I-80	SR 84 is a CA Legal Advisory Route until PM 15.7	
Miner Slough siphon	North: Holland Road; SR 84; I-80	SR 84 is a CA Legal Advisory Route until PM 15.7	
	South: Ryer Road; SR 84; I-80	SR 84 is a CA Legal Advisory Route until PM 15.7	
Elevator Road bridge	SR 84; I-80	SR 84 is a CA Legal Advisory Route until PM 15.7	
SR 220 bridge	SR 84; I-80	SR 84 is a CA Legal Advisory Route until PM 15.7	
North end of tunnel	SR 84; I-80	SR 84 is a CA Legal Advisory Route until PM 15.7	
Tunnel work area	SR 84; I-80	SR 84 is a CA Legal Advisory Route until PM 15.7	
Cache Slough shaft	SR 84; I-80	SR 84 is a CA Legal Advisory Route until PM 15.7	
	or: Cache Slough ferry; 84 south to SR 12; I-5	no tractor trailers on Cache Slough Ferry	
Sacramento River work area and shaft	160; 12	160 is a Terminal Access (STAA) Route; 12 is a Terminal Access (STAA) Route	
SR 12 work area	SR 12	12 is a Terminal Access (STAA) Route	
North of Sevenmile slough work area	W Brannan Island Road; Jackson Slough Road; SR 12	12 is a Terminal Access (STAA) Route	
South of Sevenmile slough shaft	Twitchell Island Ferry Road; W Twitchell Island Road; bridge; Jackson Slough Road; SR 12	12 is a Terminal Access (STAA) Route	
San Joaquin River work area	Twitchell Island Ferry Road; W Twitchell Island Road; bridge; Jackson Slough Road; SR 12	12 is a Terminal Access (STAA) Route	
Island north of Bethell Island (work area and shaft)	no bridge; no ferry		
Bethel Island work area and shaft	Bethel Island Road; bridge; E Cypress Road; SR 4	SR 4 (California Legal Network between Tracy Blvd and Dagget Road, then Terminal Access STAA to I-5)	

Facility or Work Area*	Haul Routes	Designated Truck Routes	Notes
Last tunnel work area	Bethel Island Road; E Cypress Road; SR 4	SR 4 (California Legal Network between Tracy Blvd and Dagget Road, then Terminal Access STAA to I-5)	
Tunnel southern end	E Cypress Road; SR 4		
Rock slough siphon	North: E Cypress Road; SR 4		
	South: Delta Road; SR 4		
Delta Road bridge	Delta Road; SR 4		
Eagle Lane Bridge	Eagle Lane; Byron Hwy; SR 4		
Orwood Road bridge	Byron Hwy; SR 4		
Balfour Road bridge	Balfour Road; SR 4		
Point of Timber Road bridge	Point of Timbe Road: SR 4		
Marsh Creek Road Bridge	Marsh Creek Road; SR 4		
SR 4 bridge	SR 4		
Bixler Road bridge	Bixler Road; SR 4		
Byer Road siphon	Byer Road, Byron Hwy, I-205		
Clifton Court Forebay	Byron Hwy; I-205		

Effects on Capacity

As with Alternatives 1A and 1B, it is expected that the majority of both employee and material hauling trips would utilize I-80 and I-5 for regional access. Construction-related trips for the intakes would need to cross the Sacramento River to reach the Alternative 1C work areas. As shown in Table 19-29, the assumptions for Alternative C haul routes for the Alternative 1C intake work areas are the Freeport bridge for intakes 1-3 and SR 84 for intakes 4-5.

Effects on Access and Mobility

Temporary access roads for construction traffic and traffic detours during construction will have similar effects on access and mobility to Alternatives 1A and 1B, but the location of the impact will differ because construction will occur on the west bank of the Sacramento River, which is less accessible to the key roadway network. The magnitude of the impact would also be greater because of the higher number of workers and vehicle trips anticipated for construction of Alternative 1C. Similar to Alternative 1B, Alternative 1C could have increased potential for conflicts with traffic on public roadways because of the bridges required at multiple locations to maintain roadway connectivity (see discussion under Impact TRANS-6). In addition, South River Road (County Highway E9) will be most affected during the construction of the Alternative 1C intakes, and will

require temporary detour roads during construction.Several roads atop levees along waterways would be affected when inverted siphons are constructed under these waterways. The operation of these roads would be interrupted during the anticipated cut-and-cover but these roads are generally access roads around the various tracts and generally do not create an interruption to public traffic. Table 19-30 lists the levee roads affected by culvert siphon construction.

Table 19-30. Levee Roads Potentially Affected by Culvert Siphon Construction (Alternative 1C)

Culvert Siphon Location	Levee Road
Elk Slough	Waukeena Road on west side. County Road 144 on east side of siphon.
Miner Slough	Holland Road on north side. Ryer Road (Highway 84) on south side.
Rock Slough	Dirt levee road on north side.
Italian Slough	Western Farms Ranch Road on north side. Clifton Court Road on south side.
Source: CER West Addendum 2010	

Temporary impacts on roadways are summarized in Table 19-31.

Table 19-31. Temporary Impacts on Public Roadways for Alternatives 1C, 2C, and 6C

[Note to reviewers: Haul routes will be updated if more information becomes available.]

Roadway	Conveyance Facility within or adjacent to Roadway	Construction Crosses Roadway	Haul Routes	Roadway Modifications
S River Road (Co Hwy E9)	X	X	X	At each intake: temporary realignment during construction; and permanent realignment during operations
SR 160			X	
Pumphouse Road		X	X	
Willow Point Road		X	X	
Clarksburg Road		X	X	
Netherlands Road		X	X	
Co Road 141		X		No bridge proposed. Unclear how connectivity will be maintained (see severed roads spreadsheet)
Co Road 142		X	X	New bridge proposed
Co Road 144		X		None (siphon)
Waukeena Road (Co Road 145)		X		None (siphon)
N Courtland Road	X		X	It is intended that N Courtland Road connectivity would be maintained (according to severed roads spreadsheet) but canal is in ROW
SR 84 (Jefferson Blvd)		X	X	New bridge proposed

Roadway	Conveyance Facility within or adjacent to Roadway	Construction Crosses Roadway	Haul Routes	Roadway Modifications
Z Line Road (Co Road 150)	X	X		No bridge proposed. Connectivity not maintained (did not show up in severed roads spreadsheet). Road adjacent to ship canal does not extend north of Courtland according to Google aerial
Courtland Road				New bridge proposed west of Z Line Road.
Teal Road		X		No bridge proposed. Connectivity not maintained (did not show up in severed roads spreadsheet)
Co Road 161		X	X	New bridge proposed
Holland Road		X	X	None (siphon)
SR 84		X	X	Temporary realignment required during construction
Elevator Road		X	X	New bridge proposed
SR 220		X	X	New bridge proposed
E Ryer Road		X	X	No bridge (tunnel). New permanent access road.
SR 160 (River Road)		X	X	No bridge (tunnel). New permanent access road.
SR 12		X	X	No bridge (tunnel)
W Brannan Island Road		X	X	No bridge (tunnel)
W Twitchell Island Road		X	X	No bridge (tunnel)
Taylor Road		X	X	No bridge (tunnel)
Canal Road		X		No bridge (tunnel)
Taylor Road		X		No bridge (tunnel)
Dutch Slough Road		X		No bridge (tunnel)
E Cypress Road		X		No bridge (tunnel)
Delta Road		X	X	New bridge proposed
Eagle Lane Road		X	X	New bridge proposed
Orwood Road		X	X	New bridge proposed
Balfour Road		X	X	New bridge proposed
Point of Timber Road		X	X	New bridge proposed
Marsh Creek Road		X	X	New bridge proposed
SR 4 (Taylor Lane)		X	X	New bridge proposed
Kellogg Creek	X			No bridge proposed. Roadway to be

Roadway	Conveyance Facility within or adjacent to Roadway	Construction Crosses Roadway	Haul Routes	Roadway Modifications
Road				realigned to intersect with Bixler Road (according to CER; to be checked when ENGR Rev 9 available)
Bixler Road		X	X	New bridge proposed
Western Farms Ranch Road	X			Connectivity not maintained (not listed in severed roads spreadsheet)
Clifton Court Road		X	X	No bridge (siphon)
Byron Hwy (Co Hwy J4)	X	X	X	New bridge proposed
Bruns Road		X		No bridge proposed. Connectivity not maintained (not listed in severed roads spreadsheet)

Construction would temporarily increase traffic volumes and alter traffic patterns. The effect of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be significant. Mitigation Measures TRANS-1a and TRANS-1b would reduce this impact to less than significant.

Mitigation Measure TRANS-1a: Establish alternate access routes

Mitigation Measure TRANS-1b: Implement traffic management plan

Impact TRANS-2: Damage to roadway surfaces from construction activities

The effect under Alternative 1C would be similar to the effects under Alternatives 1A and 1B, but greater in magnitude because of the higher amount of truck traffic, increasing the potential for damage to the roadway surface. The effect of roadway damage during construction would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of roadway damage during construction would be significant. Mitigation Measure TRANS-2 would reduce this impact to less than significant.

Mitigation Measure TRANS-2. Repair damages to roadway surfaces

Impact TRANS-3: Increase in safety hazards during construction

The effect under Alternative 1B would be the similar to the effect under Alternatives 1A and 1B, but greater in magnitude because the higher amount of total construction-related trips would increase the potential for safety hazards from maneuvering of construction-related vehicles and equipment among general-purpose traffic on public roads. The effect of increased safety hazards would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of increased safety hazards would be significant. Mitigation Measure TRANS-1a, described above, would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan.

Impact TRANS-4: Interference with emergency management routes during construction

Alternative 1C would require a heavy volume of materials to be hauled to the construction work zones. As shown in Tables 19-26 and 19-28, many of the roadways near construction zones would be utilized for hauling construction materials. Alternative 1C would require the provision of detours along South River Road (County Highway E9) at the intake sites. Detours are shown in Table 19-32. The effect under Alternative 1C would be the similar to the effects under Alternatives 1A and 1B, but greater in magnitude because of the increased potential for delays to emergency service providers using public roads in the Delta subregion.

Table 19-32. Distance of Detours - Alternative 1C, 2C, and 6C

[Note to Reviewers: Data in this table will be validated based on GIS analysis of ENGR Rev 9.]

Construction Feature/ Detoured Roadway	Existing Road Length (miles)	Detoured Road Length (miles)	Difference in Distance (miles)
Intake 2 (State Route 160)	0.71	1.06	0.35
Intake 3 (State Route 160)	1.46	1.09	-0.37
Intake 5 (County Road E9)	0.89	1.21	0.32
Total Distance	3.06	3.36	0.30

The effect of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be significant. Mitigation Measures TRANS-1a and TRANS-1b, described above, would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Mitigation Measure TRANS-1b: Establish alternate access routes

Impact TRANS-5: Disruption of marine traffic during construction

Under Alternative 1C a temporary barge unloading facility for construction material is planned on the Sacramento River adjacent to SR 160 west of Isleton. Approximately 4,500 barge trips are projected to carry construction materials to this unloading facility. *[Note to Reviewers: information based on response to RFI 190.]*

This major increase in Sacramento River barge traffic could be substantial during the construction period. The increase in barge traffic could adversely affect use of the river by boaters. Because barges are relatively slow and have less maneuverability than smaller vessels, increased barge traffic could cause additional impediments to the passage of other vessels. Increased barge traffic could also cause an additional constraint to roadways that have moveable bridges. If barge traffic

were to increase, there could be an increase in the frequency of temporary road closures needed to operate the moveable bridge, enabling the barge traffic to continue along the river. During the time that the roadway is obstructed, traffic delays would increase.

The effect of disruption to marine traffic during construction would be adverse. Mitigation is available to reduce the impact to a less-than-significant level.

CEQA Conclusion: The impact of disruption to marine traffic during construction would be significant. Mitigation Measures TRANS-5a and TRANS-5b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-5a. Implement barge management plans

Mitigation Measure TRANS-5b. Comply with permit requirements for navigable waterways

Impact TRANS-6: Disruption of rail traffic during construction

The potential for Alternative 1C to disrupt rail service on the UPRR Tracy Subdivision branch line would be the same as Alternative 1A with regard to construction of the new forebay. The proposed conveyance (new canal and siphon) crosses the existing BNSF railway/Amtrak line approximately between Sunset Road and Orwood Road. Because this crossing is in a major work area, the train operations along the BNSF Railway/Amtrak San Joaquin Line could be affected. (See Table 19-33 for construction impacts on rail lines).

Table 19-33. Construction Impacts on Rail Traffic - Alternatives 1C, 2C, and 6C

Affected Railroad	Crosses and/or Immediately Adjacent to Construction Zone	Level of Train Volume	Construction Impacts on Rail Traffic
BNSF Railway and Amtrak San Joaquin Line	Yes	High	Significant—railroad crosses construction of proposed new canal and siphon between Sunset Road and Orwood Road in a proposed major work area.
Union Pacific Railroad--Tracy Subdivision	Yes	Low (Out of Service)	Minimal to Non-Existent

If the UPRR Tracy Subdivision branch line is reopened prior to construction, the continuity of rail traffic can be managed, if needed, through implementation of Mitigation Measure TRANS-6. Construction would temporarily disrupt rail operations on the BNSF. The effect of disruption to rail traffic during construction would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of disruption to rail traffic during construction would be significant. Mitigation Measure TRANS-6 would reduce this impact to less than significant.

Mitigation Measure TRANS-6: Consult with the BNSF Railway, Amtrak, and UPRR, develop and implement rail construction management plans, if necessary.

Impact TRANS-7: Disruption of transit service during construction

Construction of the canal conveyances and other project elements under Alternative 1C could require construction detours or contribute to congestion during lane closures and other construction activities, thereby affecting transit routes and schedules. Table 19-34 summarizes the transit service potentially affected under Alternative 1C.

Table 19-34. Construction Impacts on Bus Routes - Alternatives 1C, 2C, and 6C

Affected Transit Service	Roadway Operated On and Location	Estimated Trips per Day	Construction Impacts on Bus Routes
Tri-Delta Transit—Route 386	SR 4 west of Bixler Road	6 trips per weekday (3 in each direction)	Affected by canal construction at SR 4.
Rio Vista Transit—Route 50	SR 160, west of Isleton	4 trips per weekday (2 in each direction)	Marginal (if any)—Deep bore tunnel construction below the roadway [need to confirm—if none, would remove]

The Tri-Delta Transit Route 386 could experience delays during construction. The effect of disruption to transit service during construction would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of disruption to transit service during construction would be significant. Mitigation Measure TRANS-10 would reduce the impact to a less-than-significant level.

Mitigation Measure TRANS-7: Develop and implement transit construction management plans

Impact TRANS-8: Interference with bicycle routes during construction

Several bicycle routes traverse or are adjacent to Alternative 1C and its construction zones. The temporary impacts of interference with select bicycle routes during construction of Alternative 1B are summarized in Table 19-35 below. Because some bicycle traffic may be found on all primary and secondary roadways in the Transportation study area, please also refer to Roadway Impact section for construction that may also affect bicycle traffic.

Table 19-35. Construction Impacts on Bicycle Routes - Alternatives 1C, 2C, and 6C

Bicycle Route	Construction Crosses or Adjacent to Bicycle Route	Bicycle Route Along Truck Haul Routes
South River Road Route	Intake construction would impact bike route	No
SR 160 River Road	Intake construction would affect bike route	Yes
SR 12	Bike Route crosses above deep bore tunnel underground-limited impact, however adjacent to work area	Yes
SR 4	Bike Route crosses canal/new bridge—work area	No
SR 84	Bike Route crosses canal/new bridge—work area	No
SR 220	Bike Route crosses new bridge over canal— work area	Yes
Delta Ecosystem Trail	A planned (Class I) bikeway along one or both levees of the Sacramento River Deep Water Ship Channel could be impacted by construction on the intake right of way and/or the proposed canal conveyance on the east side of the Deep Water Ship Channel.	No

Construction would temporarily disrupt bicycle routes on SR 160, River Road, and SR 12 (and potentially SR 220). The effect of disruption to bicycle routes during construction would be adverse. Mitigation is available to reduce the impact.

CEQA Conclusion: The impact of disruption to bicycle routes during construction would be significant. Mitigation Measure TRANS-8 would reduce the impact to a less-than-significant level.

Mitigation Measure TRANS-8: Implement a bicycle traffic management plan as a component of motorized vehicular traffic management plan

Impact TRANS-9: Increased traffic volumes and delays during operations

The effect of maintaining and operating the facilities roadway operations under Alternative 1C would be similar to Alternatives 1A and 1B. The effect of increased traffic volumes and delays during project operations would not be adverse.

CEQA Conclusion: The impact of increased traffic volumes and delays during project operations would be less than significant. No mitigation is required.

Impact TRANS-10: Permanent alteration of traffic patterns during operations

Alternative 1C would require realignment of South River Road at the intakes, and multiple bridges across the alignment to maintain connectivity. Each intake/pumping plant site will require realignment of the adjacent levee road. The levee road adjacent to sites 1, 2, 3, 4, and 5 is County Highway E9 (South River Road). Alternative 1C would intersect several public roadways, state routes, and one railroad requiring bridges at most of these locations to maintain connectivity along the canal (see Table 19-31).

Public roads potentially affected under Alternative 1B include:

- County Road 141: It is intended that connectivity of County Road 141 between County Highway E9 (S River Road) and County Road 144 will be maintained. County Road 141 would continue

over buried pipelines from Intakes 1 and 2 and stay north and west of the beginning embankments for the canal. *[Note to Reviewers: Will design allow for connectivity of County Road 141 to be maintained?]*

- N Courtland Road: N Courtland Road between Waukeena Road and Widgeon Road is close to or within the canal right-of-way. *[Note to Reviewers: Will design allow for current alignment to be maintained?]*
- Z Line Road (County Road 150): No bridge is proposed for this location and connectivity not maintained. The road adjacent to ship canal does not appear to extend north of Courtland. *[Note to Reviewers: is realignment intended to be a mitigation measure?]*
- Teal Road: No bridge is proposed for this location, and therefore connectivity is not maintained
- Kellogg Creek Road: No bridge is proposed for this location. The project would realign this roadway to intersect with Bixler Road. *[Note to Reviewers: is realignment intended to be a mitigation measure?]*
- Western Farms Ranch Road: Connectivity is not maintained.
- Bruns Road: No bridge is proposed, and connectivity is not maintained.

The effect of permanent alteration of transportation patterns during operations [would be/would not be] adverse. *[Note to Reviewers: Need to discuss disposition of questions above for affected public roads – will these be rerouted as part of project? If not, mitigation may be required]*

CEQA Conclusion: The impact of permanent alteration of transportation patterns during operations [would be/would not be] significant.

Impact TRANS-11: Increased risk of wildlife-aircraft strikes during implementation of CM2–CM24 to create or improve wildlife habitat

At the program-level of analysis, the impact under Alternative 1C would be the same as Alternative 1A because the acreage of conservation is identical. The effect of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be significant. Mitigation Measure TRANS-11 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-11: Consult with individual airports and USFWS, and other relevant organizations

Impact TRANS-12: Increased traffic volumes during construction of CM2–CM24

At the program-level of analysis, the impact under Alternative 1C would be the same as Alternative 1A because the acreage of conservation is identical. The effect of increased traffic volumes during construction of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased traffic volumes during construction of CM2–CM24 would be significant. Mitigation Measure TRANS-1a would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

19.3.3.5 Alternative 2A

Impact TRANS-1: Increased traffic volumes and delays, and alteration of traffic patterns during construction

A total of 5 intakes would be constructed under Alternative 2A. For the purposes of this analysis, Alternative 2A was assumed to construct intakes CER 1–5 or intakes CER 1-3 and Alt 6–7. This alternative would also construct an intermediate forebay, and the conveyance facility would be a buried pipeline (see Figures 3-2 and 3-3 in Chapter 3, *Alternatives*). The estimate of the number of vehicles generated by construction activities for Alternative 2A would be similar to Alternative 1A (refer to Table 19-11) but slightly higher due to the addition of operable barriers. Construction haul routes and public roads affected by Alternative 2A are identified in Tables 19-12 and 19-13, respectively. The effect of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be significant. Mitigation Measure TRANS-1a and TRANS-1b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Mitigation Measure TRANS-1b: Establish alternate access routes

Impact TRANS-2: Damage to roadway surfaces from construction activities

The estimated number of vehicle trips generated by construction activities for Alternative 2A would be similar to Alternative 1A (refer to Table 19-11) but slightly higher due to the addition of operable barriers. Haul routes and affected public roadways would be the same as for Alternative 1A (see Tables 19-12 and 19-13). Therefore, the effect under Alternative 2A would be similar to the effect under Alternative 1A, although somewhat greater in magnitude because of the higher amount of truck traffic, slightly increasing the potential for damage to the roadway surface. The effect of roadway damage during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of roadway damage during construction would be significant. Mitigation Measure TRANS-2 would reduce this impact to less-than-significant level.

Mitigation Measure TRANS-2: Repair damages to roadway surfaces

Impact TRANS-3: Increase in safety hazards during construction

The estimated number of vehicle trips generated by construction activities for Alternative 2A would be similar to Alternative 1A (refer to Table 19-11) but slightly higher due to the addition of operable barriers. Therefore, the effect under Alternative 2A would be similar to the effect under Alternative 1A, although somewhat greater in magnitude because of the higher amount of truck traffic, slightly increasing the potential for safety hazards from maneuvering of construction-related vehicles and equipment among general-purpose traffic on public roads. The effect of increased safety hazards would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased safety hazards would be significant. Mitigation Measure TRANS-1a would reduce this impact to less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Impact TRANS-4: Interference with emergency management routes during construction

The effect of the temporary detours of SR 160 under Alternative 2A would be the same as Alternative 1, as shown in Table 19-14 but slightly higher due to the addition of operable barriers. Therefore, the effect under Alternative 2A would be the similar to the effect under Alternative 1A, but slightly greater in magnitude because of the higher amount of truck traffic, slightly increasing the potential for delays to emergency service providers using public roads in the Delta subregion. The effect of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be significant. Mitigation Measures TRANS-1a and TRANS-1b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Mitigation Measure TRANS-1b: Establish alternate access routes

Impact TRANS-5: Disruption of marine traffic during construction

Because the quantities of construction-related barge traffic are not known at present, it is not possible to identify differences in the effect under Alternative 2A compared to the other alternatives. The impact is assumed to have a similar potential to affect use of the river by boaters and impede marine traffic during construction. The effect of disruption to marine traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to marine traffic during construction would be significant. Mitigation Measures TRANS-5a and TRANS-5b would reduce this impact.

Mitigation Measure TRANS-5a: Implement barge management plans

Mitigation Measure TRANS-5b: Comply with permit requirements for navigable waterways

Impact TRANS-6: Disruption of rail traffic during construction

The effects under Alternative 2A on the BNSF Railway and Amtrak San Joaquin Line and the Union Pacific Railroad--Tracy Subdivision would be similar to that described for Alternative 1A. The effect of disruption to rail traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to rail traffic during construction would be significant. Mitigation Measure TRANS-6 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-6: Consult with the UPRR, develop and implement a rail construction management plan, if necessary

Impact TRANS-7: Disruption of transit service during construction

The effect of Alternative 2A on operation of the SCT Link/Delta Route, traffic on SR 12 and Intercity Greyhound bus lines would be similar to that described for Alternative 1A. The effect of disruption to transit service during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to transit service during construction would be significant. Mitigation Measure TRANS-7 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-7: Develop and implement a transit construction management plan

Impact TRANS-8: Interference with bicycle routes during construction

The effect of Alternative 2A on bicycle routes along SR 160/River Road and potentially along SR 12 would be similar to that described for Alternative 1A. The effect of disruption to bicycle routes during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to bicycle routes during construction would be significant. Mitigation Measure TRANS-8 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-8: Implement a bicycle traffic management plan as a component of motorized vehicular traffic management plan

Impact TRANS-9: Increased traffic volumes and delays during operations

The effect of maintaining and operating the facilities roadway operations under Alternative 2A would be similar to Alternative 1A. The effect of increased traffic volumes and delays during project operations would not be adverse.

CEQA Conclusion: The impact of increased traffic volumes and delays during project operations would be less than significant. No mitigation is required.

Impact TRANS-10: Permanent alteration of traffic patterns during operations

The effect of maintaining and operating the project under Alternative 2A would be similar to Alternative 1A. Maintenance and operations would not generate substantial numbers of trips or otherwise have the potential to alter traffic patterns. The effect of permanent alteration of transportation patterns during operations would not be adverse.

CEQA Conclusion: The impact of permanent alteration of transportation patterns during operations would be less than significant. No mitigation is required.

Impact TRANS-11: Increased risk of wildlife-aircraft strikes during implementation of CM2–CM24 to create or improve wildlife habitat

At the program-level of analysis, the impact under Alternative 2A would be the same as Alternative 1A because the acreage of conservation is identical. The effect of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be significant. Mitigation Measure TRANS-11 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-11: Consult with individual airports and USFWS, and other relevant organizations

Impact TRANS-12: Increased traffic volumes during construction of CM2–CM24

At the program-level of analysis, the impact under Alternative 2A would be the same as Alternative 1A because the acreage of conservation is identical. The effect of increased traffic volumes during construction of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased traffic volumes during construction of CM2–CM24 would be significant. Mitigation Measure TRANS-1a would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

19.3.3.6 Alternative 2B

Impact TRANS-1: Increased traffic volumes and delays, and alteration of traffic patterns during construction

A total of 5 intakes would be constructed under Alternative 2B. For the purposes of this analysis, Alternative 2B was assumed to construct intakes CER 1–5 or intakes CER 1–3 and Alt 6–7, intermediate forebay, and a buried pipeline conveyance, and operable barriers (see Figures 3-2 and 3-3 in Chapter 3, *Alternatives*). The estimate of the number of vehicles generated by construction activities for Alternative 2B would be similar to Alternative 1B (refer to Table 19-11) but slightly higher due to the addition of operable barriers. Construction haul routes and public roads affected by Alternative 2B are identified in Tables 19-20 and 19-22, respectively. The effect of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be significant. Mitigation Measure TRANS-1a and TRANS-1b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Mitigation Measure TRANS-1b: Establish alternate access routes

Impact TRANS-2: Damage to roadway surfaces from construction activities

The estimate of the number of vehicles generated by construction activities for Alternative 2B would be similar to Alternative 1B (refer to Table 19-22) but slightly higher due to the addition of operable barriers. Haul routes and affected public roadways would be the same as for Alternative 1B (see Tables 19-20 and 19-22). Therefore, the effects under Alternative 2B would be similar to the effects under Alternative 1B and substantially greater in magnitude than Alternative 1A, thereby increasing

the potential for damage to the roadway surface. The effect of roadway damage during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of roadway damage during construction would be significant. Mitigation Measure TRANS-2 would reduce this impact to less-than-significant level.

Mitigation Measure TRANS-2: Repair damages to roadway surfaces

Impact TRANS-3: Increase in safety hazards during construction

The effect under Alternative 2B would be the similar to the effect under Alternative 1B, but substantially greater in magnitude than Alternative 1A (refer to Tables 19-10 and 19-18). The substantially higher amount of total construction-related trips would increase the potential for safety hazards from maneuvering of construction-related vehicles and equipment among general-purpose traffic on public roads. The effect of increased safety hazards would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased safety hazards would be significant. Mitigation Measure TRANS-1a would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Impact TRANS-4: Interference with emergency management routes during construction

The effect of the temporary detours of SR 160 and total amounts of construction vehicles on the roadway system under Alternative 2B would be similar to Alternative 1B and would have a similar potential for delays to emergency service providers using public roads in the Delta subregion. The effect of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be significant. Mitigation Measures TRANS-1a and TRANS-1b, described above, would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Mitigation Measure TRANS-1b: Establish alternate access routes

Impact TRANS-5: Disruption of marine traffic during construction

Because the quantities of construction-related barge traffic and locations of unloading facilities are not known at present, it is not possible to identify differences in the impact of Alternative 2B compared to the other alternatives. However, the impact is assumed to have a potential to affect use of the river by boaters and impede marine traffic during construction. Theeffect of disruption to marine traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to marine traffic during construction would be significant. Mitigation Measures TRANS-5a and TRANS-5b would reduce this impact.

Mitigation Measure TRANS-5a: Implement barge management plans

Mitigation Measure TRANS-5b: Comply with permit requirements for navigable waterways

Impact TRANS-6: Disruption of rail traffic during construction

The potential for Alternative 2B to disrupt rail service on the UPRR Tracy Subdivision branch line and BNSF/Amtrak railroad operations would be similar to the effect under Alternative 1B. (See Table 19-23 for construction impacts on rail lines). The effect of disruption to rail traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to rail traffic during construction would be significant. Mitigation Measure TRANS-6 would reduce this impact.

Mitigation Measure TRANS-6. Consult with the BNSF Railway, Amtrak, and Union Pacific Railroad and develop/implement rail construction management plans, if necessary

Impact TRANS-7: Disruption of transit service during construction

The effect of Alternative 2B on operation of the SCT Link/Delta Route, traffic on SR 12 and Intercity Greyhound bus lines would be similar to that described for Alternative 1B. The effect of disruption to transit service during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to transit service during construction would be significant. Mitigation Measure TRANS-7 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-7: Develop and implement a transit construction management plan

Impact TRANS-8: Interference with bicycle routes during construction

The potential for Alternative 2B to interfere with bicycle routes along SR 12 would be similar to the effect under Alternative 1B. The effect of disruption to bicycle routes during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to bicycle routes during construction would be significant. Mitigation Measure TRANS-8 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-8: Implement a bicycle traffic management plan as a component of motorized vehicular traffic management plan

Impact TRANS-9: Increased traffic volumes and delays during operations

The effect of maintaining and operating the facilities under Alternative 2B would be similar to Alternative 1B. The effect of increased traffic volumes and delays during project operations would not be adverse.

CEQA Conclusion: The impact of increased traffic volumes and delays during project operations would be less than significant. No mitigation is required.

Impact TRANS-10: Permanent alteration of traffic patterns during operations

The effect of maintaining and operating the facilities under Alternative 2B would be similar to Alternative 1B. The effect of permanent alteration of transportation patterns during operations would not be adverse.

CEQA Conclusion: The impact of permanent alteration of transportation patterns during operations would be less than significant. No mitigation is required.

Impact TRANS-11: Increased risk of wildlife-aircraft strikes during implementation of CM2–CM24 to create or improve wildlife habitat

At the program-level of analysis, the impact under Alternative 2B would be the same as Alternative 1B because the acreage of conservation is identical. The effect of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be significant. Mitigation Measure TRANS-11 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-11: Consult with individual airports and USFWS, and other relevant organizations

Impact TRANS-12: Increased traffic volumes during construction of CM2–CM24

At the program-level of analysis, the impact under Alternative 2B would be the same as Alternative 1B because the acreage of conservation is identical. The effect of increased traffic volumes during construction of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased traffic volumes during construction of CM2–CM24 would be significant. Mitigation Measure TRANS-1a would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

19.3.3.7 Alternative 2C

Impact TRANS-1: Increased traffic volumes and delays, and alteration of traffic patterns during construction

For the purposes of this analysis, Alternative 2C was assumed to construct intakes CER 1–5 or intakes CER 1–3 and Alt 6–7, an intermediate forebay, and a buried pipeline conveyance, and operable barriers (see Figures 3-2 and 3-3 in Chapter 3, *Alternatives*). The estimate of the number of vehicles generated by construction activities for Alternative 2C (Table 19-28) would be similar to Alternative 1C but slightly higher due to the addition of operable barriers. Construction haul routes and public roads affected by Alternative 2C are identified in Tables 19-29 and 19-31, respectively. The effect of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be significant. Mitigation Measure TRANS-1a and TRANS-1b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Mitigation Measure TRANS-1b: Establish alternate access routes

Impact TRANS-2: Damage to roadway surfaces from construction activities

The estimated number of vehicle trips generated by construction activities for Alternative 2C would be similar to Alternative 1C (refer to Table 19-28) but slightly higher due to the addition of operable barriers. Haul routes and affected public roadways would be the same as for Alternative 1C (see Tables 19-29 and 19-31). Therefore, the effect under Alternative 2C would be similar to the effect under Alternative 1C, although somewhat greater in magnitude because of the higher amount of truck traffic, slightly increasing the potential for damage to the roadway surface. The effect of roadway damage during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of roadway damage during construction would be significant. Mitigation Measure TRANS-2 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-2. Repair damages to roadway surfaces

Impact TRANS-3: Increase in safety hazards during construction

The estimated number of vehicle trips generated by construction activities for Alternative 2C would be similar to Alternative 1C (refer to Table 19-284) but slightly higher due to the addition of operable barriers. Therefore, the effect under Alternative 2C would be similar to the effect under Alternative 1C, although somewhat greater in magnitude because of the higher amount of truck traffic, slightly increasing the potential for safety hazards from maneuvering of construction-related vehicles and equipment among general-purpose traffic on public roads. The effect of increased safety hazards would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased safety hazards would be significant. Mitigation Measure TRANS-1a would reduce this impact to less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Impact TRANS-4: Interference with emergency management routes during construction

The effect of the temporary detours of SR 160 and total amounts of construction vehicles on the roadway system would be under Alternative 2C would be similar to Alternative 1C and would have a similar potential for delays to emergency service providers using public roads in the Delta subregion. The effect of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be significant. Mitigation Measures TRANS-1a and TRANS-1b, described above, would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Mitigation Measure TRANS-1b: Establish alternate access routes

Impact TRANS-5: Disruption of marine traffic during construction

Because the quantities of construction-related barge traffic are not known at present, it is not possible to identify differences in the impact of Alternative 2C compared to the other alternatives. The impact is assumed to have a potential to affect use of the river by boaters and impede marine traffic during construction. The effect of disruption to marine traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to marine traffic during construction would be significant. Mitigation Measures TRANS-5a and TRANS-5b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-5a. Implement barge management plans

Mitigation Measure TRANS-5b: Comply with permit requirements for navigable waterways

Impact TRANS-6: Disruption of rail traffic during construction

The potential for Alternative 2C to disrupt rail service on the UPRR Tracy Subdivision branch line and BNSF/Amtrak railroad operations would be similar to the effect under Alternative 1C. The effect of disruption to rail traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to rail traffic during construction would be significant. Mitigation Measure TRANS-6 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-6: Consult with the BNSF Railway, Amtrak, and Union Pacific Railroad (UPRR) and Develop/Implement a Rail Construction Management Plans, if necessary

Impact TRANS-7: Disruption of transit service during construction

The effect of Alternative 2C on the Tri-Delta Transit Route 386 would be the same as that of Alternative 1C. The effect of disruption to transit service during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to transit service during construction would be significant. Mitigation Measure TRANS-7 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-7: Develop and implement transit construction management plans

Impact TRANS-8: Interference with bicycle routes during construction

The effect of Alternative 2C on bicycle routes along SR 160, River Road, and SR 12 (and potentially SR 220) would be similar to that of Alternative 1C. The effect of disruption to bicycle routes during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to bicycle routes during construction would be significant. Mitigation Measure TRANS-8 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-8: Implement bicycle traffic management plan as a component of motorized vehicular traffic management plan

Impact TRANS-9: Increased traffic volumes and delays during operations

The effect of maintaining and operating the facilities roadway operations under Alternative 1C would be similar to Alternative 1A. The effect of increased traffic volumes and delays during project operations would not be adverse.

CEQA Conclusion: The impact of increased traffic volumes and delays during project operations would be less than significant. No mitigation is required.

Impact TRANS-10: Permanent alteration of traffic patterns during operations

The effects under Alternative 2C would be the same as those under Alternative 1C. The effect of permanent alteration of transportation patterns during operations [would be/would not be] adverse. *[Note to Reviewers: Need to discuss disposition of questions on affected public roads (Z Line and Kellogg) – will these be rerouted as part of project? If not, mitigation may be required]*

CEQA Conclusion: The impact of permanent alteration of transportation patterns during operations [would be/would not be] significant.

Impact TRANS-11: Increased risk of wildlife-aircraft strikes during implementation of CM2–CM24 to create or improve wildlife habitat

At the program-level of analysis, the impact under Alternative 2C would be the same as Alternative 1A because the acreage of conservation is identical. The effect of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be significant. Mitigation Measure TRANS-11 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-11: Consult with individual airports and USFWS, and other relevant organizations

Impact TRANS-12: Increased traffic volumes during construction of CM2–CM24

At the program-level of analysis, the impact under Alternative 2C would be the same as Alternative 1A because the acreage of conservation is identical. The effect of increased traffic volumes during construction of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased traffic volumes during construction of CM2–CM24 would be significant. Mitigation Measure TRANS-1a would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

19.3.3.8 Alternative 3

Impact TRANS-1: Increased traffic volumes and delays, and alteration of traffic patterns during construction

A total of 2 intakes would be constructed under Alternative 3. For the purposes of this analysis, Alternative 3 was assumed to construct intakes CER 1–2. This alternative would also construct an intermediate forebay, and the conveyance facility would be a buried pipeline (see Figures 3-2 and 3-8 in Chapter 3, *Alternatives*). The estimate of the number of vehicles generated by construction activities for Alternative 3 would be similar to Alternative 1A (refer to Table 19-11); however, Alternative 3 would use only intakes 1 and 2 with less overall traffic impacts during construction (truck traffic and workers traffic generated by intake construction is reduced by 60% compared to Alternative 1A). Localized impacts in the vicinity of intakes 3, 4, and 5 would not occur. Construction haul routes and public roads affected by Alternative 3 are identified in Tables 19-12 and 19-14. The effect of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be significant. Mitigation Measure TRANS-1a and TRANS-1b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Establish alternate access routes

Mitigation Measure TRANS-1b: Implement traffic management plan

Impact TRANS-2: Damage to roadway surfaces from construction activities

The estimate of the number of vehicles generated by construction activities for Alternative 3 would be similar to Alternative 1A (refer to Table 19-11) but less in magnitude because only two intakes would be constructed (approximately a 60% reduction). Haul routes and affected public roadways would be the same as for Alternative 1A (see Figures 19-12 and 19-14). Therefore, the effect under Alternative 3 would be similar to the effect under Alternative 1A, although somewhat less in magnitude because of the lower amount of truck traffic, slightly decreasing the potential for damage to the roadway surface. The effect of roadway damage during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of roadway damage during construction would be significant. Mitigation Measure TRANS-2 would reduce this impact to less-than-significant level.

Mitigation Measure TRANS-2: Repair damages to roadway surfaces

Impact TRANS-3: Increase in safety hazards during construction

The effects under Alternative 3 would be similar to those described for Alternative 1A although of lesser magnitude because Alternative 3 would construct two intake structures rather than five, with an approximately 60% reduction in vehicle generation. The effect of increased safety hazards would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased safety hazards would be significant. Mitigation Measure TRANS-1a would reduce this impact to less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Impact TRANS-4: Interference with emergency management routes during construction

The effects under Alternative 3 would be similar to those described for Alternative 1A although of lesser magnitude because Alternative 3 would construct two intake structures rather than five, with an approximately 60% reduction in vehicle generation. The effect of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be significant. Mitigation Measures TRANS-1a and TRANS-1b would reduce this impact to less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Mitigation Measure TRANS-1b: Establish alternate access routes

Impact TRANS-5: Disruption of marine traffic during construction

Because the quantities of construction-related barge traffic are not known at present, it is not possible to identify differences in the impact of Alternative 3 compared to the other alternatives. The impact is assumed to have a potential to affect use of the river by boaters and impede marine traffic during construction. The effect of disruption to marine traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to marine traffic during construction would be significant. Mitigation Measures TRANS-5a and TRANS-5b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-5a: Implement barge management plans

Mitigation Measure TRANS-5b: Comply with permit requirements for navigable waterways.

Impact TRANS-6: Disruption of rail traffic during construction

The effects under Alternative 3 on the BNSF Railway and Amtrak San Joaquin Line and the Union Pacific Railroad--Tracy Subdivision would be similar to that described for Alternative 1A. The effect of disruption to rail traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to rail traffic during construction would be significant. Mitigation Measure TRANS-6 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-6: Consult with UPRR, develop, and implement a rail construction management plan, if necessary

Impact TRANS-7: Disruption of transit service during construction

The effect of Alternative 3 on operation of the SCT Link/Delta Route, traffic on SR 12 and Intercity Greyhound bus lines would be similar to that described for Alternative 1A. The effect of disruption to transit service during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to transit service during construction would be significant. Mitigation Measure TRANS-7 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-7: Develop and implement transit construction management plans

Impact TRANS-8: Interference with bicycle routes during construction

The effect of Alternative 3 on bicycle routes along SR 160/River Road and potentially along SR 12 would be similar to that described for Alternative 1A although of lesser magnitude because Alternative 3 would construct two intake structures rather than five. The effect of disruption to bicycle routes during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to bicycle routes during construction would be significant. Mitigation Measure TRANS-8 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-8: Implement bicycle traffic management plan as a component of motorized vehicular traffic management plan

Impact TRANS-9: Increased traffic volumes and delays during operations

The effect of maintaining and operating the facilities on roadway operations under Alternative 3 would be similar to Alternative 1A but slightly less in magnitude because only two intakes would be operated and maintained and fewer employee trips would be anticipated. The impact of increased traffic volumes and delays during project operations would not be adverse.

CEQA Conclusion: The impact of increased traffic volumes and delays during project operations would be less than significant. No mitigation is required.

Impact TRANS-10: Permanent alteration of traffic patterns during operations

The effects under Alternative 3 would be similar to Alternative 1A but slightly less in magnitude because only two intakes would be operated and maintained and fewer employee trips would be anticipated. The impact of permanent alteration of transportation patterns during operations would not be adverse.

CEQA Conclusion: The impact of permanent alteration of transportation patterns during operations would be less than significant. No mitigation is required.

Impact TRANS-11: Increased risk of wildlife-aircraft strikes during implementation of CM2–CM24 to create or improve wildlife habitat

At the program-level of analysis, the impact under Alternative 3 would be the same as Alternative 1A because the acreage of conservation is identical. The effect of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be significant. Mitigation Measure TRANS-11 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-11: Consult with individual airports and USFWS, and other relevant organizations

Impact TRANS-12: Increased traffic volumes during construction of CM2–CM24

At the program-level of analysis, the impact under Alternative 3 would be the same as Alternative 1A because the acreage of conservation is identical. The effect of increased traffic volumes during construction of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased traffic volumes during construction of CM2–CM24 would be significant. Mitigation Measure TRANS-1a would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

19.3.3.9 Alternative 4

Impact TRANS-1: Increased traffic volumes and delays, and alteration of traffic patterns during construction

A total of 3 intakes would be constructed under Alternative 4. For the purposes of this analysis, Alternative 4 was assumed to construct intakes CER 1–3. This alternative would also construct an intermediate forebay, and the conveyance facility would be a buried pipeline (see Figures 3-2 and 3-8 in Chapter 3, *Alternatives*). The estimate of the number of vehicles generated by construction activities for Alternative 4 would be similar to Alternative 1A (refer to Table 19-11); however, Alternative 3 would use only intakes 1–3 with less overall traffic impacts during construction (truck traffic and workers traffic generated by intake construction is reduced by 40% compared to Alternative 1A). Localized impacts in the vicinity of intakes 4 and 5 would not occur. Construction haul routes and public roads affected by Alternative 3 are identified in Tables 19-12 and 19-13. The effect of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be significant. Mitigation Measure TRANS-1a and TRANS-1b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Establish alternate access routes

Mitigation Measure TRANS-1b: Implement traffic management plan

Impact TRANS-2: Damage to roadway surfaces from construction activities

The effects under Alternative 4 would be similar to Alternative 1A but slightly less in magnitude because only three intakes would be constructed, with less overall traffic impacts during construction (truck traffic and workers traffic generated by intake construction is reduced by 40% compared to Alternative 1A). Localized impacts in the vicinity of intakes 4 and 5 would not occur. Construction haul routes and public roads affected by Alternative 4 are identified in Tables 19-12 and Table 19-13.

The effect of roadway damage during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of roadway damage during construction would be significant. Mitigation Measure TRANS-2 would reduce this impact to less than significant.

Mitigation Measure TRANS-2: Repair damages to roadway surfaces

Impact TRANS-3: Increase in safety hazards during construction

The effects under Alternative 4 would be similar to those described for Alternative 1A although of lesser magnitude because Alternative 4 would construct three intake structures rather than five, with an approximately 40% reduction in vehicle trips. The of increased safety hazards effect would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased safety hazards would be significant. Mitigation Measure TRANS-1a would reduce this impact to less than significant.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Impact TRANS-4: Interference with emergency management routes during construction

The effects under Alternative 4 would be similar to those described for Alternative 1A although of lesser magnitude because Alternative 4 would construct three intake structures rather than five, with an approximately 40% reduction in vehicle trips. The effect of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be significant. Mitigation Measures TRANS-1a and TRANS-1b would reduce this impact to less than significant.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Mitigation Measure TRANS-1b: Establish alternate access routes

Impact TRANS-5: Disruption of marine traffic during construction

Because the quantities of construction-related barge traffic and locations of unloading facilities are not known at present, it is not possible to identify differences in the impact of Alternative 4 compared to the other alternatives. The impact is assumed to have a potential to affect use of the river by boaters and impede marine traffic during construction. The effect of disruption to marine traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to marine traffic during construction would be significant. Mitigation Measures TRANS-5a and TRANS-5b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-5a: Implement barge management plans

Mitigation Measure TRANS-5b: Comply with permit requirements for navigable waterways

Impact TRANS-6: Disruption of rail traffic during construction

The effects under Alternative 4 on the BNSF Railway and Amtrak San Joaquin Line and the Union Pacific Railroad--Tracy Subdivision would be similar to that described for Alternative 1A. The effect of disruption to rail traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to rail traffic during construction would be significant. Mitigation Measure TRANS-6 would reduce this impact to less than significant.

Mitigation Measure TRANS-6: Consult with UPRR, develop, and implement a rail construction management plan, if necessary

Impact TRANS-7: Disruption of transit service during construction

The effect of Alternative 4 on operation of the SCT Link/Delta Route, traffic on SR 12 and Intercity Greyhound bus lines would be similar to that described for Alternative 1A. The effect of disruption to transit service during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to transit service during construction would be significant. Mitigation Measure TRANS-7 would reduce this impact to less than significant.

Mitigation Measure TRANS-7: Develop and implement transit construction management plans

Impact TRANS-8: Interference with bicycle routes during construction

The effect of Alternative 4 on bicycle routes along SR 160/River Road and potentially along SR 12 would be similar to that described for Alternative 1A although of lesser magnitude because Alternative 4 would construct three intake structures rather than five. The effect of disruption to bicycle routes during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to bicycle routes during construction would be significant. Mitigation Measure TRANS-8 would reduce this impact to less than significant.

Mitigation Measure TRANS-8: Implement bicycle traffic management plan as a component of motorized vehicular traffic management plan

Impact TRANS-9: Increased traffic volumes and delays during operations

The effect of maintaining and operating the facilities on roadway operations under Alternative 4 would be similar to Alternative 1A but slightly less in magnitude because only three intakes would

be operated and maintained and few employee trips would be anticipated. The effect of increased traffic volumes and delays during project operations would not be adverse.

CEQA Conclusion: The impact of increased traffic volumes and delays during project operations would be less than significant. No mitigation is required.

Impact TRANS-10: Permanent alteration of traffic patterns during operations

The effects under Alternative 4 would be similar to those described for Alternative 1A although of lesser magnitude because only three intakes would be operated and maintained and few employee trips would be anticipated. The effect of permanent alteration of transportation patterns during operations would not be adverse.

CEQA Conclusion: The impact of permanent alteration of transportation patterns during operations would be less than significant. No mitigation is required.

Impact TRANS-11: Increased risk of wildlife-aircraft strikes during implementation of CM2–CM24 to create or improve wildlife habitat

At the program-level of analysis, the impact under Alternative 4 would be the same as Alternative 1A because the acreage of conservation is identical. The effect of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be significant. Mitigation Measure TRANS-11 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-11: Consult with individual airports and USFWS, and other relevant organizations

Impact TRANS-12: Increased traffic volumes during construction of CM2–CM24

At the program-level of analysis, the impact under Alternative 4 would be the same as Alternative 1A because the acreage of conservation is identical. The effect of increased traffic volumes during construction of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased traffic volumes during construction of CM2–CM24 would be significant. Mitigation Measure TRANS-1a would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

19.3.3.10 Alternative 5

Impact TRANS-1: Increased traffic volumes and delays, and alteration of traffic patterns during construction

One intake would be constructed under Alternative 5. For the purposes of this analysis, Alternative 5 was assumed to construct intake CER 1, an intermediate forebay, a buried pipeline conveyance, and operable barriers (see Figures 3-2 and 3-8 in Chapter 3, *Alternatives*). The estimate of the number of vehicles generated by construction activities for Alternative 5 would be similar to Alternative 1A

(refer to Table 19-11); however, Alternative 5 would use only one intake with less overall traffic impacts during construction (truck traffic and workers traffic generated by intake construction is reduced by 80% compared to Alternative 1A). Localized impacts in the vicinity of intakes 2–7 would not occur.

Construction haul routes and public roads affected by Alternative 5 are identified in Tables 19-12 and 19-13. The effect of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be significant. Mitigation Measure TRANS-1a and TRANS-1b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Establish alternate access routes

Mitigation Measure TRANS-1b: Implement traffic management plan

Impact TRANS-2: Damage to roadway surfaces from construction activities

The effects under Alternative 5 would be similar to Alternative 1A but slightly less in magnitude because only one intake would be constructed, with less overall traffic impacts during construction (truck traffic and workers traffic generated by intake construction is reduced by approximately 80% compared to Alternative 1A). Localized impacts in the vicinity of intakes 2–7 would not occur.

Construction haul routes and public roads affected by Alternative 5 are identified in Tables 19-12 and 19-13.

The effect of roadway damage during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of roadway damage during construction would be significant. Mitigation Measure TRANS-2 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-2: Repair damages to roadway surfaces

Impact TRANS-3: Increase in safety hazards during construction

The effects under Alternative 5 would be similar to those described for Alternative 1A although of lesser magnitude because Alternative 5 would construct one intake structure rather than five, with an approximately 80% reduction in trip generation. The effect of increased safety hazards would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased safety hazards would be significant. Mitigation Measure TRANS-1a would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Impact TRANS-4: Interference with emergency management routes during construction

The effects under Alternative 5 would be similar to those described for Alternative 1A although of lesser magnitude because Alternative 5 would construct one intake structure rather than five, with an approximately 80% reduction in trip generation. The effect of unacceptable emergency response

times or the inability to maintain adequate vehicular access to geographical service areas would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be significant. Mitigation Measure TRANS-1a and TRANS-1b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Mitigation Measure TRANS-1b: Establish alternate access routes

Impact TRANS-5: Disruption of marine traffic during construction

Because the quantities of construction-related barge traffic and locations of barge unloading facilities are not known at present, it is not possible to identify differences in the impact of Alternative 5 compared to the other alternatives. The impact is assumed to have a potential to affect use of the river by boaters and impede marine traffic during construction. The effect of disruption to marine traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to marine traffic during construction would be significant. Mitigation Measures TRANS-5a and TRANS-5b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-5a: Implement barge management plans

Mitigation Measure TRANS-5b: Comply with permit requirements for navigable waterways

Impact TRANS-6: Disruption of rail traffic during construction

The effects under Alternative 5 on the BNSF Railway and Amtrak San Joaquin Line and the Union Pacific Railroad--Tracy Subdivision would be similar to that described for Alternative 1A. The effect of disruption to rail traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to rail traffic during construction would be significant. Mitigation Measure TRANS-6 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-6: Consult with UPRR, develop, and implement a rail construction management plan, if necessary

Impact TRANS-7: Disruption of transit service during construction

The effect of Alternative 5 on operation of the SCT Link/Delta Route, traffic on SR 12 and Intercity Greyhound bus lines would be similar to that described for Alternative 1A. The effect of disruption to transit service during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to transit service during construction would be significant. Mitigation Measure TRANS-7 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-7: Develop and implement transit construction management plans

Impact TRANS-8: Interference with bicycle routes during construction

The effect of Alternative 5 on bicycle routes along SR 160/River Road and potentially along SR 12 would be similar to that described for Alternative 1A although of lesser magnitude because Alternative 5 would construct one intake structure rather than five. The effect of disruption to bicycle routes during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to bicycle routes during construction would be significant. Mitigation Measure TRANS-8 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-8: Implement bicycle traffic management plan as a component of motorized vehicular traffic management plan

Impact TRANS-9: Increased traffic volumes and delays during operations

The effect of maintaining and operating the facilities on roadway operations under Alternative 5 would be similar to Alternative 1A but substantially less in magnitude because only 1 intake would be operated and maintained and fewer employee trips would be anticipated. The effect of increased traffic volumes and delays during project operations would not be adverse.

CEQA Conclusion: The impact of increased traffic volumes and delays during project operations would be less than significant. No mitigation is required.

Impact TRANS-10: Permanent alteration of traffic patterns during operations

The effects under Alternative 5 would be similar to those described for Alternative 1A although of lesser magnitude because only 1 intake would be operated and maintained and fewer employee trips would be anticipated. The effect of permanent alteration of transportation patterns during operations would not be adverse.

CEQA Conclusion: The impact of permanent alteration of transportation patterns during operations would be less than significant. No mitigation is required.

Impact TRANS-11: Increased risk of wildlife-aircraft strikes during implementation of CM2–CM24 to create or improve wildlife habitat

At the program-level of analysis, the impact under Alternative 5 would be the similar to Alternative 1A but slightly less in magnitude because the acreage of conservation would be less. The effect of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be significant. Mitigation Measure TRANS-11 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-11: Consult with individual airports and USFWS, and other relevant organizations

Impact TRANS-12: Increased traffic volumes during construction of CM2–CM24

At the program-level of analysis, the impact under Alternative 5 would be similar to Alternative 1A but slightly less in magnitude because the acreage of conservation would be less. The effect of increased traffic volumes during construction of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased traffic volumes during construction of CM2–CM24 would be significant. Mitigation Measure TRANS-1a would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

19.3.3.11 Alternative 6A

Impact TRANS-1: Increased traffic volumes and delays, and alteration of traffic patterns during construction

A total of 5 intakes would be constructed under Alternative 6A. For the purposes of this analysis, Alternative 6 was assumed to construct intakes CER 1–5. This alternative would also construct an intermediate forebay, and the conveyance facility would be a buried pipeline (see Figures 3-2 and 3-8 in Chapter 3, *Alternatives*). The estimate of the number of vehicles generated by construction activities for Alternative 6A would be the same as Alternative 1A, assuming that discontinuing the use of the SWP and CVP south Delta export facilities would not generate any significant traffic or close off existing roadways (refer to Table 19-11). Construction haul routes and public roads affected by Alternative 6A are identified in Tables 19-12 and 19-13. The effect of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be significant. Mitigation Measures TRANS-1a and TRANS-1b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Mitigation Measure TRANS-1b: Establish alternate access routes

Impact TRANS-2: Damage to roadway surfaces from construction activities

The estimate of the number of vehicles generated by construction activities for Alternative 6A would be similar to Alternative 1A, assuming that discontinuing the use of the SWP and CVP south Delta export facilities would not generate any significant traffic or close off existing roadways (refer to Table 19-11). Construction haul routes and public roads affected by Alternative 5 are identified in Tables 19-12 and 19-13. The effect of roadway damage during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of roadway damage during construction would be significant. Mitigation Measure TRANS-2 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-2: Repair damages to roadway surfaces

Impact TRANS-3: Increase in safety hazards during construction

The estimated number of vehicle trips generated by construction activities for Alternative 6A would be similar to Alternative 1A (refer to Table 19-11), with a similar potential to result in safety hazards from maneuvering of construction-related vehicles and equipment among general-purpose traffic on public roads. The effect of increased safety hazards would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased safety hazards would be significant. Mitigation Measure TRANS-1a would reduce this impact to less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Impact TRANS-4: Interference with emergency management routes during construction

The effect of the temporary detours of SR 160 under Alternative 6A would be the same as Alternative 1A, with similar potential for delays to emergency service providers using public roads in the Delta subregion. The effect of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be significant. Mitigation Measures TRANS-1a and TRANS-1b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Mitigation Measure TRANS-1b: Establish alternate access routes

Impact TRANS-5: Disruption of marine traffic during construction

Because the quantities of construction-related barge traffic and locations of barge unloading facilities are not known at present, it is not possible to identify differences in the impact of Alternative 6A compared to the other alternatives. The impact is assumed to have a potential to affect use of the river by boaters and impede marine traffic during construction. The effect of disruption to marine traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to marine traffic during construction would be significant. Mitigation Measures TRANS-5a and TRANS-5b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-5a: Implement barge management plans

Mitigation Measure TRANS-5b: Comply with permit requirements for navigable waterways

Impact TRANS-6: Disruption of rail traffic during construction

The effects under Alternative 6A on the BNSF Railway and Amtrak San Joaquin Line and the Union Pacific Railroad--Tracy Subdivision would be similar to those described for Alternative 1A. The

effect of disruption to rail traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to rail traffic during construction would be significant. Mitigation Measure TRANS-6 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-6: Consult with UPRR, develop, and implement a rail construction management plan, if necessary

Impact TRANS-7: Disruption of transit service during construction

The effect of Alternative 6 on operation of the SCT Link/Delta Route, traffic on SR 12 and Intercity Greyhound bus lines would be similar to that described for Alternative 1A. The effect of disruption to transit service during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to transit service during construction would be significant. Mitigation Measure TRANS-7 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-7: Develop and implement transit construction management plans

Impact TRANS-8: Interference with bicycle routes during construction

The effect of Alternative 6A on bicycle routes along SR 160/River Road and potentially along SR 12 would be similar to that described for Alternative 1A. The effect of disruption to bicycle routes during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to bicycle routes during construction would be significant. Mitigation Measure TRANS-8 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-8: Implement bicycle traffic management plan as a component of motorized vehicular traffic management plan

Impact TRANS-9: Increased traffic volumes and delays during operations

The effect of maintaining and operating the facilities roadway operations under Alternative 6A would be similar to Alternative 1A. The effect of increased traffic volumes and delays during project operations would not be adverse.

CEQA Conclusion: The impact of increased traffic volumes and delays during project operations would be less than significant. No mitigation is required.

Impact TRANS-10: Permanent alteration of transportation patterns during operations

The effect on transportation patterns under Alternative 6A would be similar to Alternative 1A. The effect of permanent alteration of transportation patterns during operations would not be adverse.

CEQA Conclusion: The impact of permanent alteration of transportation patterns during operations would be less than significant. No mitigation is required.

Impact TRANS-11: Increased risk of wildlife-aircraft strikes during implementation of CM2–CM24 to create or improve wildlife habitat

At the program-level of analysis, the impact under Alternative 6A would be the same as Alternative 1A because the acreage of conservation is identical. The effect of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be significant. Mitigation Measure TRANS-11 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-11: Consult with individual airports and USFWS, and other relevant organizations

Impact TRANS-12: Increased traffic volumes during construction of CM2–CM24

At the program-level of analysis, the impact under Alternative 6A would be the same as Alternative 1A because the acreage of conservation is identical. The effect of increased traffic volumes during construction of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased traffic volumes during construction of CM2–CM24 would be significant. Mitigation Measure TRANS-1a would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

19.3.3.12 Alternative 6B

Impact TRANS-1: Increased traffic volumes and delays, and alteration of traffic patterns during construction

The estimate of the number of vehicles generated by construction activities for Alternative 6B would be similar to Alternative 1B (refer to Table 19-19). Haul routes and affected public roadways would be the same as for Alternative 1B (see Tables 19-20 and 19-22). Alternative 6B would have the same potential to increase traffic volumes and alter traffic patterns as Alternative 1B (assuming that discontinuing the use of the SWP and CVP south Delta export facilities would not generate any significant traffic or close off existing roadways). The effect of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be significant. Mitigation Measures TRANS-1a and TRANS1-b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Establish alternate access routes

Mitigation Measure TRANS-1b: Implement traffic management plan

Impact TRANS-2: Damage to roadway surfaces from construction activities

The potential for damage to the roadway surface would be the same under Alternative 6B as Alternative 1B (assuming that discontinuing the use of the SWP and CVP south Delta export facilities would not generate any significant traffic). The effect of roadway damage during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of roadway damage during construction would be significant. Mitigation Measure TRANS-2 would reduce this impact to less-than-significant level.

Mitigation Measure TRANS-2. Repair damages to roadway surfaces

Impact TRANS-3: Increase in safety hazards during construction

The potential for increased safety hazards during construction would be the same under Alternative 6B as Alternative 1B (assuming that discontinuing the use of the SWP and CVP south Delta export facilities would not generate any significant traffic or close off existing roadways). The effect of increased safety hazards would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased safety hazards would be significant. Mitigation Measure TRANS-1a would reduce this impact to less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Impact TRANS-4: Interference with emergency management routes during construction

The potential for interference with emergency services during construction would be the same under Alternative 6B as Alternative 1B (assuming that discontinuing the use of the SWP and CVP south Delta export facilities would not generate any significant traffic or close off existing roadways). The effect of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be significant. Mitigation Measures TRANS-1a and TRANS-1b would reduce this impact to less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Mitigation Measure TRANS-1b: Establish alternate access routes

Impact TRANS-5: Disruption of marine traffic during construction

Because the quantities of construction-related barge traffic and locations of barge unloading facilities are not known at present, it is not possible to identify differences in the impact of Alternative 6B compared to the other alternatives. The impact is assumed to have a potential to affect use of the river by boaters and impede marine traffic during construction. The effect of disruption to marine traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to marine traffic during construction would be significant. Mitigation Measures TRANS-5a and TRANS-5b would reduce this impact to less-than-significant level.

Mitigation Measure TRANS-5a. Implement barge management plans

Mitigation Measure TRANS-5b: Comply with permit requirements for navigable waterways

Impact TRANS-6: Disruption of rail traffic during construction

The potential for Alternative 6B to disrupt rail service on the UPRR Tracy Subdivision branch line and BNSF/Amtrak railroad operations would be similar to the effect under Alternative 1B. The effect of disruption to rail traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to rail traffic during construction would be significant. Mitigation Measure TRANS-6 would reduce this impact to less-than-significant level.

Mitigation Measure TRANS-6. Consult with the BNSF Railway, Amtrak, and UPRR, develop, and implement rail construction management plans, if necessary

Impact TRANS-7: disruption of transit service during construction

The effect of Alternative 6B on operation of the SCT Link/Delta Route, traffic on SR 12 and Intercity Greyhound bus lines would be similar to that described for Alternative 1B. The effect of disruption to transit service during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to transit service during construction would be significant. Mitigation Measure TRANS-7 would reduce this impact to less-than-significant level.

Mitigation Measure TRANS-7. Develop and implement transit construction management plans

Impact TRANS-8: Interference with bicycle routes during construction

The potential to interfere with bicycle routes along SR 12 during construction would be the same under Alternative 6B as Alternative 1B (assuming that discontinuing the use of the SWP and CVP south Delta export facilities would not generate any significant traffic or close off existing roadways). The of disruption to bicycle routes during construction effect would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to bicycle routes during construction would be significant. Mitigation Measure TRANS-8 would reduce this impact to less-than-significant level.

Mitigation Measure TRANS-8. Implement bicycle traffic management plan as a component of motorized vehicular traffic management plan

Impact TRANS-9: Increased traffic volumes and delays during operations

The potential for increased traffic volumes and delays during operations would be the same under Alternative 6B as Alternative 1B. The effect of increased traffic volumes and delays during project operations would not be adverse.

CEQA Conclusion: The impact of increased traffic volumes and delays during project operations would be less than significant. No mitigation is required.

Impact TRANS-10: Permanent alteration of traffic patterns during operations

The potential for permanent alteration of traffic patterns during operations would be the same under Alternative 6B as Alternative 1B. The effect of permanent alteration of transportation patterns during operations would not be adverse.

CEQA Conclusion: The impact of permanent alteration of transportation patterns during operations would be less than significant. No mitigation is required.

Impact TRANS-11: Increased risk of wildlife-aircraft strikes during implementation of CM2–CM24 to create or improve wildlife habitat

At the program-level of analysis, the impact under Alternative 6B would be the same as Alternative 1B because the acreage of conservation is identical. The effect would be adverse. Mitigation is available to reduce the effect. The effect of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be significant. Mitigation Measure TRANS-11 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-11: Consult with individual airports and USFWS, and other relevant organizations

Impact TRANS-12: Increased traffic volumes during construction of CM2–CM24

At the program-level of analysis, the impact under Alternative 6B would be the same as Alternative 1B because the acreage of conservation is identical. The effect of increased traffic volumes during construction of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased traffic volumes during construction of CM2–CM24 would be significant. Mitigation Measure TRANS-1a would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

19.3.3.13 Alternative 6C

Impact TRANS-1: Increased traffic volumes and delays, and alteration of traffic patterns during construction

Alternative 6C would construct five intakes on the west bank of the Sacramento River. The estimate of the number of vehicles generated by construction activities for Alternative 6C would be similar to

Alternative 1C (refer to Table 19-26). Haul routes and affected public roadways would be the same as for Alternative 1C (see Tables 19-28 and Table 19-29). Alternative 6C would have the same potential to increase traffic volumes and alter traffic patterns as Alternative 1C (assuming that discontinuing the use of the SWP and CVP south Delta export facilities would not generate any significant traffic or close off existing roadways). The effect of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be significant. Mitigation Measures TRANS-1a and TRANS-1b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Establish alternate access routes

Mitigation Measure TRANS-1b: Implement traffic management plan

Impact TRANS-2: Damage to roadway surfaces from construction activities

The potential for damage to road surfaces during construction would be the same under Alternative 6C as Alternative 1C (assuming that discontinuing the use of the SWP and CVP south Delta export facilities would not generate any significant traffic or close off existing roadways). The effect of roadway damage during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of roadway damage during construction would be significant. Mitigation Measure TRANS-2 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-2. Repair damages to roadway surfaces

Impact TRANS-3: Increase in safety hazards during construction

The potential to increase safety hazards during construction would be the same under Alternative 6C as Alternative 1C (assuming that discontinuing the use of the SWP and CVP south Delta export facilities would not generate any significant traffic or close off existing roadways). The effect of increased safety hazards would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased safety hazards would be significant. Mitigation Measure TRANS-1a, described above, would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Impact TRANS-4: Interference with emergency management routes during construction

The potential to interfere with emergency services during construction would be the same under Alternative 6C as Alternative 1C (assuming that discontinuing the use of the SWP and CVP south Delta export facilities would not generate any significant traffic or close off existing roadways). The effect of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be significant. Mitigation Measures TRANS-1a and TRANS-1b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Mitigation Measure TRANS-1b: Establish alternate access routes

Impact TRANS-5: Disruption of marine traffic during construction

Because the quantities of construction-related barge traffic and locations of barge unloading facilities are not known at present, it is not possible to identify differences in the impact of Alternative 6C compared to the other alternatives. The impact is assumed to have a potential to affect use of the river by boaters and impede marine traffic during construction. The effect of disruption to marine traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to marine traffic during construction would be significant. Mitigation Measures TRANS-5a and TRANS-5b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-5a. Implement barge management plans

Mitigation Measure TRANS-5b: Comply with permit requirements for navigable waterways

Impact TRANS-6: Disruption of rail traffic during construction

The potential for Alternative 6C to disrupt rail service on the UPRR Tracy Subdivision branch line and BNSF/Amtrak railroad operations would be similar to the effect under Alternative 1C. The effect of disruption to rail traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to rail traffic during construction would be significant. Mitigation Measure TRANS-6 would reduce the impact to a less-than-significant level.

Mitigation Measure TRANS-6: Consult with the BNSF Railway, Amtrak, and UPRR, develop, and implement rail construction management plans, if necessary

Impact TRANS-7: Disruption of transit service during construction

The effect of Alternative 2C on the Tri-Delta Transit Route 386 would be the same as that of Alternative 1C. The effect of disruption to transit service during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to transit service during construction would be significant. Mitigation Measure TRANS-7 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-7: Develop and implement transit construction management plans

Impact TRANS-8: Interference with bicycle routes during construction

The effect of Alternative 6C on bicycle routes along SR 160, River Road, and SR 12 (and potentially SR 220) would be similar to that of Alternative 1C. The effect of disruption to bicycle routes during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to bicycle routes during construction would be significant. Mitigation Measure TRANS-8 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-8: Implement bicycle traffic management plan as a component of motorized vehicular traffic management plan

Impact TRANS-9: Increased traffic volumes and delays during operations

The potential for increase traffic volumes and delays during operationswould be the same under Alternative 6C as Alternative 1C. The effect of increased traffic volumes and delays during project operations would not be adverse.

CEQA Conclusion: The impact of increased traffic volumes and delays during project operations would be less than significant. No mitigation is required.

Impact TRANS-10: Permanent alteration of traffic patterns during operations

The potential to alter traffic patterns during operations would be the same under Alternative 6C as Alternative 1C. The effect of permanent alteration of transportation patterns during operations would not be adverse.

CEQA Conclusion: The impact of permanent alteration of transportation patterns during operations would be less than significant. No mitigation is required.

Impact TRANS-11: Increased risk of wildlife-aircraft strikes during implementation of CM2–CM24 to create or improve wildlife habitat

At the program-level of analysis, the impact under Alternative 6C would be the same as Alternative 1A because the acreage of conservation is identical. The effect of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be significant. Mitigation Measure TRANS-11 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-11: Consult with individual airports and USFWS, and other relevant organizations

Impact TRANS-12: Increased traffic volumes during construction of CM2–CM24

At the program-level of analysis, the impact under Alternative 6C would be the same as Alternative 1A because the acreage of conservation is identical. The effect of increased traffic volumes during construction of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased traffic volumes during construction of CM2–CM24 would be significant. Mitigation Measure TRANS-1a would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

19.3.3.14 Alternative 7

Impact TRANS-1: Increased traffic volumes and delays, and alteration of traffic patterns during construction

For the purposes of this analysis, Alternative 7 was assumed to construct intakes CER 2, 3, and 5. This alternative would also construct an intermediate forebay, and the conveyance facility would be a buried pipeline (see Figures 3-2 and 3-8 in Chapter 3, *Alternatives*). The estimate of the number of vehicles generated by construction activities for Alternative 7 would be the similar to Alternative 1A except only intakes 3 intakes would be constructed, resulting in a 40% reduction in overall traffic impacts during construction (refer to Table 19-11). Localized impacts in the vicinity of Intakes 1 and 5-7would not occur. Construction haul routes and public roads affected by Alternative 7 are identified in Tables 19-12 and 19-13. The effect of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be significant. Mitigation Measures TRANS-1a and TRANS-1b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Establish alternate access routes

Mitigation Measure TRANS-1b: Implement traffic management plan

Impact TRANS-2: Damage to roadway surfaces from construction activities

The potential to damage road surfaces during construction under Alternative 7 would be similar to Alternative 1A, except only three intakes would be constructed, resulting in less overall traffic impacts during construction (truck traffic and workers traffic generated by intake construction is reduced by 40% compared to 1A). Localized impacts in the vicinity of Intakes 4 and 5–7 would not occur. Construction haul routes and public roads affected by Alternative 7 are identified in Tables 19-11 and 19-12, respectively. The effect of roadway damage during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of roadway damage during construction would be significant. Mitigation Measure TRANS-2 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-2: Repair damages to roadway surfaces

Impact TRANS-3: Increase in safety hazards during construction

The potential for increases in safety hazards during construction under Alternative 7 would be similar to Alternative 1A, except only three intakes would be constructed, resulting in less overall traffic impacts during construction (truck traffic and workers traffic generated by intake

construction is reduced by 40% compared to 1A), thereby reducing the potential for impact. The effect of increased safety hazards would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased safety hazards would be significant. Mitigation Measure TRANS-1a would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Impact TRANS-4: Interference with emergency management routes during construction

The potential to interfere with emergency services during construction under Alternative 7 would be similar to Alternative 1A, except that truck traffic and workers traffic generated by intake construction would be reduced by 40%, thereby reducing the potential for impact. The effect of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be significant. Mitigation Measure TRANS-1a and TRANS-1b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Mitigation Measure TRANS-1b: Establish alternate access routes

Impact TRANS-5: Disruption of marine traffic during construction

Because the quantities of construction-related barge traffic and locations of barge unloading facilities are not known at present, it is not possible to identify differences in the impact of Alternative 6C compared to the other alternatives. The impact is assumed to have a potential to affect use of the river by boaters and impede marine traffic during construction. The effect of disruption to marine traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to marine traffic during construction would be significant. Mitigation Measure TRANS-5a and TRANS-5b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-5a: Implement barge management plans

Mitigation Measure TRANS-5b: Comply with permit requirements for navigable waterways

Impact TRANS-6: Disruption of rail traffic during construction

The potential to disrupt rail traffic during construction under Alternative 7 would be similar to Alternative 1A. The effect of disruption to rail traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to rail traffic during construction would be significant. Mitigation Measure TRANS-6 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-6: Consult with the Union Pacific Railroad (UPRR) and develop/implement a rail construction management plan, if necessary

Impact TRANS-7: Disruption of transit service during construction

The effect of Alternative 7 on operation of the SCT Link/Delta Route, traffic on SR 12 and Intercity Greyhound bus lines would be similar to that described for Alternative 1A. The effect of disruption to transit service during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to transit service during construction would be significant. Mitigation Measure TRANS-7 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-7: Develop and implement transit construction management plans

Impact TRANS-8: Interference with bicycle routes during construction

The effect of Alternative 7 on bicycle routes along SR 160/River Road and potentially along SR 12 would be similar to that described for Alternative 1A although of lesser magnitude because Alternative 7 would construct three intakes rather than five. The effect of disruption to bicycle routes during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to bicycle routes during construction would be significant. Mitigation Measure TRANS-8 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-8: Implement bicycle traffic management plan as a component of motorized vehicular traffic management plan

Impact TRANS-9: Increased traffic volumes and delays during operations

The potential to increase traffic volumes and delays during operations under Alternative 7 would be similar to Alternative 1A, but the effect would be lesser in magnitude because only three intakes would need to be operated and maintained. The effect of increased traffic volumes and delays during project operations would not be adverse.

CEQA Conclusion: The impact of increased traffic volumes and delays during project operations would be less than significant. No mitigation is required

Impact TRANS-10: Permanent alteration of traffic patterns during operations

The potential to alter traffic patterns during operations under Alternative 7 would be similar to Alternative 1A, but the effect would be lesser in magnitude because only three intakes would need to be operated and maintained. The effect of permanent alteration of transportation patterns during operations would not be adverse.

CEQA Conclusion: The impact of permanent alteration of transportation patterns during operations would be less than significant. No mitigation is required.

Impact TRANS-11: Increased risk of wildlife-aircraft strikes during implementation of CM2–CM24 to create or improve wildlife habitat

At the program-level of analysis, the impact under Alternative 7 would be similar to Alternative 1A but slightly greater in magnitude because the acreage of conservation would be greater. The effect of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be significant. Mitigation Measure TRANS-11 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-11: Consult with individual airports and USFWS, and other relevant organizations

Impact TRANS-12: Increased traffic volumes during construction of CM2–CM24

At the program-level of analysis, the impact under Alternative 7 would be the similar to Alternative 1A but slighter greater in magnitude because the acreage of conservation would be greater. The effect of increased traffic volumes during construction of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased traffic volumes during construction of CM2–CM24 would be significant. Mitigation Measure TRANS-1a would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

19.3.3.15 Alternative 8

Impact TRANS-1: Increased traffic volumes and delays, and alteration of traffic patterns during construction

The impacts of Alternative 8 would be the same as Alternative 7. Both are assumed to construct intakes CER 2–4 and an intermediate forebay, and the conveyance facility would be a buried pipeline (see Figures 3-2 and 3-8 in Chapter 3, *Alternatives*). As with Alternative 7, the estimate of the number of vehicles generated by construction activities for Alternative 8 would result in a 40% reduction in overall traffic impacts during construction, compared to Alternative 1A (refer to Table 19-11), and localized impacts in the vicinity of Intakes 1 and 5 would not occur. Construction haul routes and public roads affected by Alternative 8 are identified in Tables 19-12 and 19-13. The effect of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be significant. Mitigation Measures TRANS-1a and TRANS 1b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Mitigation Measure TRANS-1b: Establish alternate access routes

Impact TRANS-2: Damage to roadway surfaces from construction activities

The impacts of Alternative 8 would be the same as Alternative 7. Both are assumed to construct intakes CER 2–4 and an intermediate forebay, and the conveyance facility would be a buried pipeline (see Figures 3-2 and 3-8 in Chapter 3, *Alternatives*). As with Alternative 7, the estimate of the number of vehicles generated by construction activities for Alternative 8 would result in a 40% reduction in overall traffic impacts during construction, compared to Alternative 1A (refer to Table 19-11), and localized impacts in the vicinity of Intakes 1 and 5 would not occur. Construction haul routes and public roads affected by Alternative 5 are identified in Tables 19-12 and 19-13. The effect of roadway damage during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of roadway damage during construction would be significant. Mitigation Measure TRANS-2 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-2: Repair damages to roadway surfaces

Impact TRANS-3: Increase in safety hazards during construction

The estimated number of vehicle trips generated by construction activities for Alternative 8 would be similar the same as Alternative 7. The estimate of construction trip generation would result in a 40% reduction in overall traffic impacts, thereby substantially lessening the magnitude of the effect, relative to Alternative 1A. Alternative 7 would have the potential for safety hazards from maneuvering of construction-related vehicles and equipment among general-purpose traffic on public roads. The effect of increased safety hazards would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased safety hazards would be significant. Mitigation Measure TRANS-1a would reduce this impact to less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Impact TRANS-4: Interference with emergency management routes during construction

The effect of the temporary detours of SR 160 under Alternative 7 would be the same as Alternative 8 and would have similar potential for delays to emergency service providers using public roads in the Delta subregion. The effect of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be significant. Mitigation Measures TRANS-1a and TRANS-1b would reduce this impact.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Mitigation Measure TRANS-1b: Establish alternate access routes

Impact TRANS-5: Disruption of marine traffic during construction

Because the quantities of construction-related barge traffic are not known at present, it is not possible to identify differences in the impact of Alternative 8 compared to the other alternatives. The impact is assumed to have a similar potential to affect use of the river by boaters and impede marine traffic during construction. The effect of disruption to marine traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to marine traffic during construction would be significant. Mitigation Measures TRANS-5a and TRANS-5b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-5a: Implement barge management plans

Mitigation Measure TRANS-5b: Comply with permit requirements for navigable waterways

Impact TRANS-6: Disruption of rail traffic during construction

The effect under Alternative 7 would be the same as Alternative 8. The effect of disruption to rail traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to rail traffic during construction would be significant. Mitigation Measure TRANS-6 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-6: Consult with the UPRR, develop and implement a rail construction management plan, if necessary

Impact TRANS-7: Disruption of transit service during construction

The effect of Alternative 8on operation of the SCT Link/Delta Route, traffic on SR 12 and Intercity Greyhound bus lines would be similar to that described for Alternative 1A. The effect of disruption to transit service during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to transit service during construction would be significant. Mitigation Measure TRANS-7 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-7: Develop and implement a transit construction management plan

Impact TRANS-8: Interference with bicycle routes during construction

The effect of Alternative 8 on bicycle routes along SR 160/River Road and potentially along SR 12 would be similar to that described for Alternative 1A although of lesser magnitude because Alternative 8 would construct three intakes rather than five. The effect of disruption to bicycle routes during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to bicycle routes during construction would be significant. Mitigation Measure TRANS-8 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-8: Implement a bicycle traffic management plan as a component of motorized vehicular traffic management plan

Impact TRANS-9: Increased traffic volumes and delays during operations

The effect of maintaining and operating the facilities roadway operations under Alternative 8 would be similar to Alternative 1A, but slightly less in magnitude because only 3 intakes would be operated and maintained (approximately a 40% reduction in traffic volumes relative to Alternative 1A). The effect of increased traffic volumes and delays during project operations would not be adverse.

CEQA Conclusion: The impact of increased traffic volumes and delays during project operations would be less than significant. No mitigation is required.

Impact TRANS-10: Permanent alteration of transportation patterns during operations

The effect under Alternative 7 would be the same as Alternative 8. The effect of permanent alteration of transportation patterns during operations would not be adverse.

CEQA Conclusion: The impact of permanent alteration of transportation patterns during operations would be less than significant. No mitigation is required.

Impact TRANS-11: Increased risk of wildlife-aircraft strikes during implementation of CM2–CM24 to create or improve wildlife habitat

At the program-level of analysis, the impact under Alternative 8 would be the same as Alternative 1A because the acreage of conservation is identical. The effect of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be significant. Mitigation Measure TRANS-11 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-11: Consult with individual airports and USFWS, and other relevant organizations

Impact TRANS-12: Increased traffic volumes during construction of CM2–CM24

At the program-level of analysis, the impact under Alternative 8 would be the same as Alternative 1A because the acreage of conservation is identical. The effect of increased traffic volumes during construction of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased traffic volumes during construction of CM2–CM24 would be significant. Mitigation Measure TRANS-1a would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

19.3.3.16 Alternative 9

Impact TRANS-1: Increased traffic volumes and delays, and alteration of traffic patterns during construction

During construction of Alternative 9 facilities, temporary impacts on roadways could result in circulation delays or the inability to maintain adequate vehicular access in or around construction

work zones. An estimate of the number of workers and total truck hours of operations on highways for Alternative 9 is shown below in Table 19-36.

Table 19-36. Distance of Detours – Alternative 9

[Note to reviewers: table to be completed based on GIS analysis of ENGR Rev 9]

Construction Feature/ Detoured Roadway	Existing Road Length (miles)	Detoured Road Length (miles)	Difference in Distance (miles)
TBD	TBD	TBD	TBD
Total Distance			
Source:			

Table 19-37: Estimated Number of Construction Workers and Truck Traffic for Alternative 9

[Note to reviewers: table to be completed based on GIS analysis of ENGR Rev 9]

	Workers		
	# Workers	# Working Days	Total Truck Hours of Operations (for Highway vehicles only)
2 Intakes	TBD	TBD	TBD
Operable Barriers			
Channel Enlargement			
Culvert Siphons			
Canal			
Levees			
Diversion Pumping Plants			
Source:			

The potential haul routes for Alternative 9 are presented in Table 19-38. The table is organized around the main construction sites.

Table 19-38: Potential Haul Routes for Alternative 9

[Note to reviewers: table to be completed based on GIS analysis of ENGR Rev 9]

Facility or Work Area*	Haul Routes	Designated Truck Routes	Notes
TBD	TBD	TBD	TBD
Source: TBD			

The locations where the proposed improvements would affect roadways are concentrated at the following locations:

- Near Walnut Grove, where several channel connections and a large intake are proposed
- Near the Clifton Court Forebay, where an intertie canal is proposed to connect the forebay to the Central Valley Project Aqueduct

Table 19-39 lists the public and non-public roads affected by the Alternative 9 facilities and the proposed disposition at each location.

Table 19-39: Roadways Affected and Bridges Required in Alternative 9

[Note to Reviewers: Data from the SCO CER will be updated based on GIS analysis of ENGR Rev 9]

Roadway or Bridge	Disposition and Comments
Levee road on north bank Mokelumne River	A bridge would be required to span the gap in the levee road created by the proposed connection from the Mokelumne River to Lost Slough.
Dirt road on strip of land dividing Meadows Slough	A bridge is not proposed at this location because the dirt road is apparently lightly traveled and access to either side is available via nearby River Road.
River Road at proposed channel connection with Meadows Slough	This bridge is proposed to continue River Road over the Mokelumne River diversion. River Road is atop the levee and a bridge would be required where the levee is interrupted by the canal connecting Meadows Slough to the Sacramento River.
Clifton Court Forebay maintenance road	Proposed Intertie Canal would interrupt this perimeter roadway requiring a bridge. The road has restricted access and used by state employees only. Closing this road during construction appears feasible.
Herdlyn Road at the proposed Intertie Canal	Proposed Intertie Canal would interrupt Herdlyn Road and require a bridge to provide connectivity.

Note: All proposed bridges listed above are roadway bridges. Bridge lengths will vary depending on geometry of the channel crossed at each location, and bridge width will also vary depending on traffic and owners requirements.

Each bridge location listed in Table 19-39 would require some roadway realignment to avoid proposed facilities, or some roadway realignment can be introduced at some locations so that the new bridge would be built adjacent to or offset from the existing roadway, thus allowing traffic to be maintained on the existing roads during bridge construction. This type of construction would simplify the construction staging and allow the bridges to be built in one piece with final roadway tie-ins and construction access requiring some traffic control staging. A traffic management plan would need to be developed for each crossing. Maintaining traffic at the bridge location on River Road is obviously much more of a concern than at the other locations where public traffic is limited or nonexistent, and alternative access routes are available. The effect of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of circulation delays or the inability to maintain adequate vehicular access in or around construction work zones would be significant. Mitigation Measures TRANS-3a and TRANS-3b would reduce this impact to less than significant (CEQA conclusions will eventually be moved to Chapter 31, *CEQA Analysis*)

Mitigation Measure TRANS-1a: Establish alternate access routes

Mitigation Measure TRANS-1b: Implement traffic management plan

Impact TRANS-2: Damage to roadway surfaces from construction activities

Construction of the project components may result in damage to the roadway surfaces from truck traffic. During construction, the project components would require transporting various materials to and from the construction areas in load-bearing trucks. To the extent possible, haul routes would be limited to major roads and designated truck routes. Haul routes are discussed under Impact TRANS-3. Maintenance of state and County truck routes includes periodic inspection to assess structural integrity and need for repairs, followed by implementation of needed repairs. If construction trucks travel on roadways that are not covered by thesemaintenance programs, roadway damage such as potholes or minor fractures may occur without subsequent inspection and repair. The effect of roadway damage during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of roadway damage during construction would be significant. Mitigation Measure TRANS-2 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-2: Repair damages to roadway surfaces

Impact TRANS-3: Increase in safety hazards during construction

The maneuvering of construction-related vehicles and equipment among general-purpose traffic on public roads that provide access to the project area could cause safety hazards. The effect of increased safety hazards would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased safety hazards would be significant. Mitigation Measure TRANS-1a would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Impact TRANS-4: Interference with emergency management routes during construction

As shown in Table 19-34, many of the roadways near construction zones would be utilized for hauling construction materials, potentially delaying response times for emergency services. The effect of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of unacceptable emergency response times or the inability to maintain adequate vehicular access to geographical service areas would be significant. Mitigation Measures TRANS-1a and TRANS-b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Mitigation Measure TRANS-1b: Establish alternate access routes

Impact TRANS-5: Disruption of marine traffic during construction

In-water construction of operable barriers and barge unloading facilities could result in impediments to marine traffic on the San Joaquin River at the confluence with 1) the Old River and 2) Fisherman's Cut. The construction of an operable barrier at the confluence of Threemile Slough and the Sacramento River may have some adverse impact on marine traffic.The effect of disruption to marine traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to marine traffic during construction would be significant. Mitigation Measures TRANS-5a and TRANS-5b would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-5a. Implement barge management plans

Mitigation Measure TRANS-5b: Comply with permit requirements for navigable waterways

Impact TRANS-6: Disruption of rail traffic during construction

The impacts of Alternative 9 on rail operations is shown in Table 19-40. Train operations along the BNSF Railway/Amtrak San Joaquin Line could be affected during construction of the proposed operable barrier at the Middle River entrance of the Railroad Cut (between the Middle River and the Old River).

Table 19-40. Construction Impacts on Rail Traffic - Alternative 9

Affected Railroad	Crosses and/or Immediately Adjacent to Construction Zone	Level of Train Volume	Construction Impacts on Rail Traffic
BNSF Railway and Amtrak San Joaquin Line	Yes	High	Substantial—rail line operates down the center of the Railroad Cut and crosses construction of proposed operable barrier at the Middle River (on the eastern end of the Railroad Cut) in a proposed major work area.
Union Pacific Railroad--Tracy Subdivision	No	Low (Out of Service)	Minimal to Non-Existent

Construction could disrupt BNSF rail operations. The effect of disruption to rail traffic during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to rail traffic during construction would be significant. Mitigation Measure TRANS-6 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-6: Consult with the BNSF Railway, Amtrak, and Union Pacific Railroad and develop/implement a rail construction management plans, if necessary

Impact TRANS-7: Disruption of transit service during construction

Construction of Alternative 9 would not affect area roadways upon which transit service operates. Table 19-41 summarizes the transit service that intersects with Alternative 9.

Table 19-41. Construction Impacts on Bus Routes - Alternative 9

Affected Transit Service	Roadway Operated On and Location	Estimated Trips per Day	Construction Impacts on Bus Routes
SCT/Link Delta Route	SR 12 across the North Mokelumne River and Little Potato Slough (on existing bridges)	4 trips per weekday (2 in each direction)	None. SR 12 currently crosses both waterway corridors. No additional construction is identified at either bridge crossing location.

Although the SCT/Link Delta Route crosses Alternative 9 waterways on existing bridges, no construction-related impacts on transit operations are anticipated. However, transit routes and services may change over time and consultation with affected transit agencies would be advisable prior to construction. The effect of disruption to transit service during construction would not be adverse. However, mitigation is available to further reduce the effect.

CEQA Conclusion: The impact of disruption to transit service during construction would not be significant; however, Mitigation Measure TRANS-7 is recommended.

Mitigation Measure TRANS-7. Develop and Implement Transit Construction Management Plans

Impact TRANS-8: Interference with bicycle routes during construction

Several bicycle routes traverse or are adjacent to the proposed project and its construction zones. Bicycle routes may be separated non-motorized paths (Class I); bike lanes on a street or highway (Class II); or designated signed routes without a marked lane operating in mixed flow with motorized traffic (Class III). Bicycles may also operate legally on any roadway, regardless of whether or not a bike route class designation exists.

Construction impacts on bicycle routes are identified in Table 19-42 below. Some bicycle traffic may be found on all primary and secondary roadways in the project area, please refer to Roadway Impact section for construction that may also affect bicycle traffic.

Table 19-42. Construction Impacts on Bicycle Routes - Alternative 9

[Note to reviewers: table to be completed based on GIS analysis of ENGR Rev 9]

Bicycle Route	Construction Crosses or Adjacent to Bicycle Route	Bicycle Route Along Truck Haul Routes
River Road	Operable Barrier construction (in Walnut Grove) may affect bike route	tbd
SR 160	Operable Barrier construction (across Three Mile Slough) may affect bike route	tbd
SR 12	Bike Route crosses existing SR 12 bridges across the North Mokelumne River and Little Potato Slough —no construction impacts anticipated	tbd
SR 4	Bike Route on SR 4 crosses Middle River and large construction/dredging work area	tbd

The effect of disruption to bicycle routes during construction would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of disruption to bicycle routes during construction would be significant. Mitigation Measure TRANS-8 would reduce the impact to a less-than-significant level.

Mitigation Measure TRANS-8: Implement a bicycle traffic management plan as a component of motorized vehicular traffic management plan

Impact TRANS-9: Increased traffic volumes and delays during operations

The effect of maintaining and operating the facilities on roadway operations under Alternative 9 would be similar to Alternative 1A, but substantially less in magnitude. The effect of increased traffic volumes and delays during project operations would not be adverse.

CEQA Conclusion: The impact of increased traffic volumes and delays during project operations would be less than significant. No mitigation is required.

Impact TRANS-10: Permanent alteration of transportation patterns during operations

The effect of maintaining and operating the facilities on traffic patterns under Alternative 9 would be similar to Alternative 1A, but substantially less in magnitude. The effect of permanent alteration of transportation patterns during operations would not be adverse.

CEQA Conclusion: The impact of permanent alteration of transportation patterns during operations would be less than significant. No mitigation is required.

Impact TRANS-11: Increased risk of wildlife-aircraft strikes during implementation of CM2–CM24 to create or improve wildlife habitat

At the program-level of analysis, the impact under Alternative 9 would be the same as Alternative 1A because the acreage of conservation is identical. The effect of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact of increased wildlife-aircraft strikes during implementation of CM2–CM24 would be significant. Mitigation Measure TRANS-11 would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-11: Consult with individual airports and USFWS, and other relevant organizations

Impact TRANS-12: Increased traffic volumes during construction of CM2–CM24

At the program-level of analysis, the impact under Alternative 9 would be the same as Alternative 1A because the acreage of conservation is identical. The effect of increased traffic volumes during construction of CM2–CM24 would be adverse. Mitigation is available to reduce the effect.

CEQA Conclusion: The impact would be significant. Mitigation Measure TRANS-1a would reduce this impact to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

19.3.3.17 Cumulative Analysis

Impact TRANS-13: Cumulative impacts on transportation systems

[Note to the reviewers: This section is a placeholder. This analysis will be revised to incorporate data and conclusions based on the Level of Service analysis to be conducted for the project.]

The project would construct new access roads to the project facilities, and would modify existing roadways, access roads, and bridges, including creating temporary detours during construction. However, the project would not result in the construction of new transportation systems or increases in capacity in existing transportation systems, and therefore the cumulative analysis in this chapter focuses on temporary construction effects.

Construction of planned projects throughout the transportation study area would have temporary, discrete effects such as traffic disruption resulting in delays to travelers and users of the transportation system, although these effects would not be necessarily be substantial from a regional perspective. Such projects could include the Sacramento Deep Water Ship Channel Project, Altamont Corridor Rail Project, California High-Speed Rail System Sacramento to Merced Section, and various other infrastructure projects included in the Sacramento County General Plan Update and the metropolitan and regional transportation plans prepared by SACOG, SJCOG, and MTC.

Although it is difficult to determine when major infrastructure projects would be constructed, the cumulative impact may be substantial if these project occur during the same time frame because the magnitude of effects would greater. If these projects occurred sequentially, the construction-related effects could be drawn out for an extended period, again. If one local area experiences several large construction projects simultaneously, there could be substantial localized impacts.

Implementation of BMPs and other design measures incorporated into the project, and mitigation measures identified for project-specific effects could minimize this impact. However, the anticipated large construction effort for the project would be difficult to coordinate with the construction schedules of other large projects in the region, and therefore the project would be expected to contribute to cumulative impacts on transportation systems in the Delta.

CEQA Conclusion: The impact would be considered significant and unavoidable. Mitigation measures designed to address project-level effects would minimize the impact, but not to a less-than-significant level.

Mitigation Measure TRANS-1a: Implement site-specific traffic management plan

Mitigation Measure TRANS-1b: Establish alternate access routes

Mitigation Measure TRANS-2: Repair damages to roadway surfaces

Mitigation Measure TRANS-5a: Implement barge management plans

Mitigation Measure TRANS-5b: Comply with permit requirements for navigable waterways

Mitigation Measure TRANS-6: Consult with the UPRR, develop and implement a rail construction management plan, if necessary

Mitigation Measure TRANS-7: Develop and implement a transit construction management plan

Mitigation Measure TRANS-8: Implement a bicycle traffic management plan as a component of motorized vehicular traffic management plan

Mitigation Measure TRANS-11: Consult with individual airports and USFWS, and other relevant organizations

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